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"Scire est nescire, nisi id me
Scire alius sciret."

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INTRA-CRANIAL COMPLICATIONS OF EAR DISEASE.

A DISCUSSION AT THE BRISTOL MEDICO-CHIRURGICAL SOCIETY, MARCH 13TH, 1912.

INTRODUCED BY

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AND

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DR. MICHELL CLARKE said: Without taking up time by preliminary observations, I proceed at once to deal with the most important intra-cranial complications of ear disease, which are, of course, meningitis, abscess and sinus phlebitis.

Certain symptoms of cerebral disturbance may occur in disease of the ear, especially of the internal ear, only, and the first step is to determine whether there is actually intra-cranial disease. Even in this preliminary step in diagnosis the decision may be by no means easy. Although the onset of disease of this kind is so often insidious, by the time we are called upon for such a decision the symptoms are generally grave and acute.

Some assistance may be had from the character of the otorrhœa, for a discharge which is septic is far more likely to lead to intra-cranial complications.

Very severe symptoms may be present in otorrhœa with mastoid disease alone. Thus Byrom Bramwell[1] gives severe headache, pains radiating over the side of the skull or within the head, vomiting, giddiness, ataxia, nystagmus, and even epileptiform convulsions and optic neuritis, as occurring thus. Such symptoms, with exception of giddiness, ataxia and nystagmus, would, however, point rather to intra-cranial abscess than to ear disease as the cause. The difficulty of distinction is increased because (1) the patient is too ill as a rule to carry out the rather elaborate tests which are used to distinguish the vertigo and nystagmus originating in internal ear disease from those of cerebellar origin, although persistent nystagmus on the whole indicates disease of the cerebellum, and (2) because optic neuritis may be present in chronic otorrhœa. Ballance[2] states that the optic neuritis in such cases is of slight intensity, may be present for months without increasing, and subsides on free removal of temporal bone disease. Its persistence, therefore, after a complete operation of this kind would suggest an intra-cranial origin for it. These cases of optic neuritis in ear disease without signs of intra-cranial complication are very important, and I hope that subsequent speakers in this discussion may be able to throw some light on their frequency and severity. Their chief importance lies in the fact that if unrelieved optic atrophy and blindness may result. There are further those cases of optic neuritis with mastoid disease and indefinite signs of some intra-cranial complication which lead to so much difficulty. In a recent case of Dr. Firth's (a girl of about eleven years), operated on for mastoid disease, there was optic neuritis, most intense on the ipsolateral side, the head was kept bent towards the same shoulder, and the face turned to the opposite side, together with

[1] Allbutt and Rolleston's *System of Medicine*, vol. viii., 1910, p. 250; "Abscess of the Brain."

[2] Allbutt and Rolleston's *System of Medicine*, vol. iv. part ii., 1908, p. 475.

intense headache, vertigo, slight nystagmus, especially to ipsolateral side, difficulty in standing, and tendency to fall and to stagger towards the same side. The cerebellum was explored without result, and the child recovered gradually.

It is also important to remember here that there may be suppuration in the internal ear and an intra-cranial complication, and yet the membrana tympani may be intact. I do not propose to deal with septic sinus-phlebitis, but I should like to ask those with more experience whether repeated rigors and a high temperature of 104° and 105° occur in uncomplicated mastoid or internal ear suppuration, or whether such symptoms are diagnostic of septic sinus thrombosis in the absence of tenderness and swelling over the jugular vein?

In this stage of doubt, or of suspended decision as to the presence of an intra-cranial complication, Sir V. Horsley[1] has rightly insisted upon the necessity for a thorough neurological examination to be carried out and repeated from day to day, including daily observation of the optic discs until a diagnosis is arrived at.

Having decided that an intra-cranial complication exists, the next point to settle is whether it is due to the ear disease present. This is not always easy. A patient with chronic otorrhœa may get an attack of influenza or be suffering from uræmia; in both cases cerebral symptoms may occur which may closely simulate meningitis, or the latter may be actually present as a consequence of influenza. Further, a child with chronic otorrhœa may develope polio-encephalitis. This affection is especially apt to follow the specific fevers, for instance, measles. Measles not infrequently gives rise to middle ear disease and otorrhœa, so that both affections might own the same cause; but in such a case help would be derived from the knowledge that intra-cranial abscess, at any rate, practically never occurs as a result of recent otorrhœa, but is a consequence of otorrhœa of some standing. Polio-encephalitis, as Batten has shown, may attack the cerebellum, when the symptoms will be those belonging to this organ. Polio-encephalitis is, however, a rare

[1] *Proc. Roy. Soc. Med.*, 1911–12, v. (Otolog. Sect.), 45.

disease, and as a complication with otorrhœa would be very seldom. More frequent and important is the combination of otorrhœa with tuberculous meningitis; the otorrhœa may or may not be due to tuberculous ear disease. In my experience it is not at all uncommon for patients with tuberculous meningitis to be suffering from otorrhœa, and this is one possible route for tuberculous infection of the meninges. The diagnosis can generally be made, and the independent origin of the meningitis from the otorrhœa determined; and this is most important, for it saves the patient from possible operation, which could only hasten the end. The chief points in the diagnosis are the history of prodromal symptoms as compared with the acute onset of septic meningitis; the seat of the meningitis is generally at the base, and the characters of the cerebro-spinal fluid obtained by lumbar puncture, showing a lymphocytosis and the presence of tubercle bacilli.

If we have come to the conclusion that an intra-cranial complication directly due to the ear disease is present, we have then to determine its nature. Omitting sinus thrombosis, the distinction has to be made between abscess and meningitis. Sometimes this diagnosis is quite easy, more often it is extremely difficult, and there is the further complication that both abscess and meningitis may be present. The signs that would make the diagnosis of abscess easy are a subnormal or normal temperature, a slow and full pulse, slow but more or less normal cerebration, optic neuritis more marked on one side, headache, vomiting, giddiness, apathy, a foul tongue, progressive emaciation, with or without the special signs which enable the abscess to be localised in one of its two common situations—the cerebellum or temporo-sphenoidal lobe. In the diagnosis of meningitis most important aids are the temperature, the pulse, and the examination of the cerebro-spinal fluid. The temperature in meningitis is raised, in abscess normal or subnormal. This is a point, however, which I hope subsequent speakers will deal with, especially as to the occurrence of a raised temperature in intra-cranial abscess, more especially in its early stages. It is certain that reliance on the temperature

alone may lead to error. Thus Dr. Byrom Bramwell[1] quotes a case in which there were three acute abscesses in the brain with suppurative meningitis at the base and great increase of the intra-cranial pressure. The temperature throughout the whole course of the case was subnormal, and the pulse never over 84. Dr. Logan Turner[2] referred to a case which suggested meningitis in the posterior fossa, but in which a cerebellar abscess was really present. The cerebro-spinal fluid was turbid, contained albumin and a large number of polymorphonuclear cells. The temperature was high, the pulse rapid, together with rigidity of the neck, double Kernig's sign, and a leucocytosis of 22,000. *Post-mortem*, a large cerebellar abscess was found lying close to the surface of the lobe and leaking into the meningeal spaces through a small aperture. No meningitis could be detected macroscopically. The greatest aid is obtained from the results of lumbar puncture. In meningitis the cerebro-spinal fluid is more or less turbid, contains albumin, and an increased number, often greatly so, of leucocytes, whilst the causative organism may be recovered from it, and the cause thus fully cleared up. In abscess, on the other hand, although there are exceptions, as in the case related by Dr. Logan Turner,[3] the cerebro-spinal fluid is generally clear, with no, or only a very slight, increase in the number of cells. Again, in meningitis the pulse is rapid and often irregular. Optic neuritis, if present, is bilateral, and other nervous signs, such as any alteration in reflexes that may be present, or in the size of the pupils, are bilateral. Kernig's sign I have not found of very great value as a distinctive sign.

A few words may be said as to the condition known as serous meningitis. This is an effusion into the meningeal or ventricular spaces excited by the presence of a pyogenic focus in their vicinity. According to Dr. Ballance,[4] it may be general, but sometimes the serous effusion is locally limited, and this may occur over the cerebellum and temporo-sphenoidal lobe, and give rise to difficulty in the diagnosis from abscess. He says

[1] *Loc. cit.* [2] *Proc. Roy. Soc. Med.*, 1911–12, v. (Otolog. Sect.), p. 62.
[3] *Loc. cit.*, p. 63. [4] *Loc. cit.*

that serous meningitis occurs chiefly in young adults, and that its signs are headache, drowsiness, a rise of temperature with a relatively slow pulse, restlessness, vomiting, and a dilated and sluggish pupil. Relief is given by lumbar puncture, the cerebro-spinal fluid being under considerable pressure, and containing no excess of or few leucocytes. Lumbar puncture is therefore of great value in diagnosis.

I do not think it necessary to do more than allude to the combination of posterior basic meningitis with otorrhœa, as the symptoms are distinctive, and lumbar puncture establishes the diagnosis.

The symptoms of intra-cranial abscess will differ according to its character, whether it is acute or chronic, and whether it is encapsuled or not. A chronic encapsuled abscess may give rise to no symptoms. There are two general symptoms on which I hope subsequent speakers may give information. First, as to the presence of fever in abscess. I gather from the recent discussion at the Otological Section of the Royal Society of Medicine that fever is absent, except possibly in the initial stages of abscess. Secondly, as to the value in diagnosis of vomiting, I have seen it stated that in cases where an abscess is extending vomiting is severe and persistent. I am not sure from my own experience that this is the case. At any rate, in two or three cases the vomiting, which had been constant and severe before, ceased shortly after admission to hospital, although the other symptoms were unchanged, and I am inclined to think that the change to the orderly *régime* of a hospital and careful regulation of diet are sufficient by themselves to check vomiting in some of these cases.

Intra-cranial abscess as a complication of ear disease is almost invariably, if single, situated either in the cerebellum or temporo-sphenoidal lobe, and on the same side as the ear disease. It is worth bearing in mind that with disease in the external ear or mastoid the abscess is generally in the cerebellum, and with disease in the tympanum in the temporo-sphenoidal lobe. The diagnosis between abscess in these two situations may be fairly easy or so difficult that, although we

are able to say that an intra-cranial abscess is present, it is almost impossible to be certain as to its position.

In either the cerebellum or the temporo-sphenoidal lobe an abscess may be entirely latent. In the cerebellum it will not give rise to characteristic signs if small and so situated as not to press upon the intra-cerebellar tracts of the superior and inferior cerebellar peduncles or of the nucleus dentatus. In the temporo-sphenoidal lobe there is a large "silent area," and unless the abscess is large, so as to cause pressure upon the Rolandic cortex or internal capsule, or is situated in the tip of the lobe, which is concerned with taste and smell, or on the left side in the posterior two-thirds of the superior temporal convolution, the auditory centre, it will give rise to no localising symptoms.

With regard to abscess in the lateral lobe of the cerebellum, in addition to the general signs of intra-cranial abscess, the localising signs, more or fewer of which may be present, are similar to those which we look for in a tumour in the same situation, but are rarely so well shown as in tumour, and, on account of the patient being more acutely ill in abscess from ear disease, cannot as a rule be so thoroughly investigated. Very often we have to be content with what we can find out from those symptoms which can be investigated with the patient lying in bed, and we are therefore deprived of the assistance to be obtained in diagnosis of cerebellar disease from the characteristic disorders of equilibration, attitude, position of the head, and gait. The most important signs are vertigo, ipsolateral paresis of the limbs [that is to say, if the ear disease is unilateral, on the same side as the ear disease], ataxia in the ipsolateral limbs, some ataxy of movement, and the position of the patient, who lies curled up in bed on the normal side, and returns to this position when disturbed. With regard to the eyes, there may be optic neuritis, weakening of the conjugate movement to the ipsolateral side, less commonly they deviate to the opposite side, lateral nystagmus, with slower jerks of greater amplitude to ipsolateral side. The pupils are unaffected, unless both are dilated from general rise of intra-cranial pressure. There is sometimes paralysis of the VIth

nerve. The knee-jerks vary, sometimes the jerk is increased on the ipsolateral side ; the superficial reflexes are unaltered. The general signs of an intra-cranial abscess have been mentioned ; but the position of headache in cerebellar abscess should be borne in mind, it is very often felt in the opposite frontal region. As to optic neuritis, as compared with abscess in the temporo-sphenoidal lobe, it comes on earlier and is more intense, and according to Sir Victor Horsley in either case it is more marked on the side of the abscess. The value of paralysis of the VIth nerve as a localising sign is much diminished by the facts that it is the first nerve to suffer in any cerebral affection which raises the intra-cranial pressure, that basic meningitis must be excluded, and that it is occasionally paralysed in ear disease without any intra-cranial complication, as in the case of a boy under Mr. Firth's care whom I saw recently. The position of the head, said to be held down towards the ipsolateral shoulder, with turning of the face towards the opposite side, which is given as a sign of lesion of a lateral lobe, I do not think is a reliable sign. Its value is especially doubtful in acute ear cases with mastoid operation, for then the head is sometimes kept in this position when there is no intra-cranial complication. In those cases where a patient is very ill, and just able to stand out of bed with support, the side towards which he tends to fall is not of much aid in diagnosis.

The paresis of the ipsolateral arm and leg with absence of facial paresis, a normal or increased knee-jerk, flexor plantar reflex, and normal abdominal reflexes is of great importance in the differential diagnosis from abscess of the temporo-sphenoidal lobe, for paresis due to the latter will be contralateral, and will affect the face, the contralateral abdominal reflexes will be absent, the plantar reflex extensor and the knee-jerk increased. Unfortunately the value of this distinction is rendered uncertain in double otorrhœa by the difficulty of determining which ear is responsible for the intra-cranial lesion ; but where one ear alone is affected the homolateral paresis of cerebellar disease contrasted with the contralateral of a temporo-sphenoidal abscess, together with the other accompanying and

distinctive signs of these two lesions respectively, is of great value.

A further caution must be given with regard to the characters of a hemiplegia, that should the cerebellar abscess be chronic and have attained a very large size, it may press upon the underlying pyramidal tract in the medulla, and therefore give rise to a paresis of the arm and leg, with an extensor plantar reflex and loss of abdominal reflexes on the opposite side. In this case some of the cranial nerves would be also involved, but the frequent affection of the VIIth in the Fallopian canal and of the VIIIth from the ear disease itself lessens the value in diagnosis of cranial nerve paralysis.

Sometimes most of the above signs of affection of the lateral lobe of the cerebellum are present in abscess, more often only a few occur. In a case that I saw with Mr. Morton some years ago the signs were unusually complete. The patient, a girl of 13, in addition to vomiting, persistent subnormal temperature, 97° F., pulse of 84, frequent fits, which suggested the cerebellar type of fit, emaciation, slow cerebration, deafness and discharge from the left ear, lay curled up on her right side in bed, with the right hand under her head, and constantly returned to this position when disturbed. There were also paresis and ataxy of the left arm, increased left knee-jerk, slight conjugate deviation of eyes to right, nystagmus, with more ample excursions to left, and right frontal headache. Double optic neuritis was present, and it is interesting to note that throughout in this case it was most intense in the right contralateral eye. Mr. Morton evacuated a large abscess in the left lateral lobe of cerebellum, and complete recovery ensued.

With regard to abscess in the temporo-sphenoidal lobe, it may be latent, because it lies in the " silent area," and this area comprises the greater part of the lobe, or because there is a free communication between the abscess cavity and the tympanum through which it can discharge. Unless the discharge is for some reason checked, there may then be no symptoms. The prompt appearance of cerebral symtoms when a communication of this kind is blocked is probably responsible for the old idea

that it is dangerous to cure an otorrhœa. A distinctive sign of temporo-sphenoidal abscess is aphasia, in the form of word-deafness, and one symptom is said to be especially common, that is inability to name objects. From pressure upon the neighbouring angular gyrus in these cases there may be also word-blindness. If a true aphasia (word-deafness) can be distinctly made out, it is pathognomonic, and excludes the cerebellum as a possible seat of the abscess. It is, however, a symptom which is only available when the disease is on the left side. Further, when the patient is very ill, suffering from toxæmia or from a general increase of the intra-cranial pressure, there may be a state of mental confusion which may be mistaken for aphasia, and as the auditory centre only occupies the posterior two-thirds of the superior temporal convolution, it may easily escape damage even when the disease is on the left side. For the same reason that the centre for taste and smell is confined to the tip of the lobe, affection of these senses is not common.

The distinction between the hemiparesis or hemiplegia produced by a temporo-sphenoidal and a cerebellar lesion respectively has been already alluded to. It remains to be said that this symptom in abscess of the temporo-sphenoidal lobe is produced by involvement of the adjacent Rolandic area of the cortex or by pressure upon the internal capsule. In the former case the onset of the hemiplegia may have a definite march, affecting in order the opposite side of the face, the arm, and the leg. If, however, the hemiplegia is established by the time the patient comes under observation the history is rarely definite enough to determine this point. Sir V. Horsley, in the discussion at the Otological Section, also pointed out the importance of a careful investigation into those forms of sensation represented in the cortex, especially the distinction between two points as such and sense of localisation. He also pointed out that in cases of multiple abscess the second one is often in the parietal lobe, and that there may then be a rise of temperature on the opposite side of the body.

Lastly, from pressure upon the IIIrd nerve, the pupil on the

side of a temporal abscess may be dilated and stabile, a valuable sign.

The above is a very brief summary of the signs which are of localising value in abscess in these two situations.

As has been already stated, in some of the symptoms the presence of double otorrhœa makes it difficult to determine their significance. It would be a great gain if the aural surgeon in double otorrhœa could give us certain indications as to which ear is the source of intra-cranial abscess; but unfortunately it seems that the ear which is not presenting the most active mischief at the time of observation may be the offender in this particular respect.

The diagnosis of abscess may be still further complicated by (1) the concomitant presence of meningitis, in which case the distinction could only be made by there being present definite localising signs of an abscess in addition to the general signs of meningitis, and (2) by the occurrence of encephalitis. I do not propose to take up more of your time by discussing the occurrence of abscess in more unusual situations, and will end this introduction to the discussion by emphasising, when an intra-cranial complication of ear disease is suspected, the value of an examination of the cerebro-spinal fluid, except in a case where an abscess in the cerebellum is fairly certain, in which case it is safer not to do a lumbar puncture, and of the risk of delay in operating when the diagnosis of an intra-cranial abscess has been arrived at. I should like to ask when a cerebellar abscess secondary to ear disease is present what is the best route of approaching it, whether, if there has been a mastoid operation, from the original opening or from a separate trephine opening in the occipital region. Lastly, if there is optic neuritis in ear disease without evidence of abscess or meningitis, and it persists after a free mastoid operation has been done, a decompression operation should be carried out.

Mr. LACY FIRTH said: (1) **Inflammation of the outer surface of the dura mater and extradural abscess.**—In this complication of suppurative ear-disease the collection of

inflammatory material, granulation tissue and pus, is epidural, lying between the surface of the temporal bone and the dura normally in contact with that bone. The incidence of the complication is almost doubly as frequent in males as in females. It affects individuals of all ages about equally. The causative inflammation most often involves the temporal bone itself, which is carious, necrosed, or ulcerated from cholesteatoma. More rarely the mucous membrane of the tympanum or antrum is alone involved.

It is an important point that pachymeningitis externa is more frequently met with as a complication of acute than of chronic otitis. The bone disease, when present, usually extends to the dura, but sometimes the path of infection is a fistulous tract passing from the ear cavities to the dura, perhaps arising from periphlebitis of vessels in the bone. Diplococcic infection is the most frequent. In some cases the extra-dural abscess may be secondary to sinus thrombosis, the inflammation passing from the sinus through its outer wall; but often the reverse is the case, *i.e.* the extradural abscess is primary, and the thrombosis secondary. It is in the cerebellar fossa that the extension of inflammation is most frequently found, but it may be in the middle fossa, or in both. Sometimes very large collections of pus form in these situations. For example, the pus may extend up to the sagittal suture, or backwards to the torcular, or downwards to the jugular bulb and into the neck. Even retro-pharyngeal abscesses have been observed from this cause. The dura may withstand penetration of the inflammation or abscess to its inner surface for weeks, months or years if the pus can partially escape through the ear, but if not the further complications of sinus disease, brain abscess or meningitis will ensue.

Symptoms.—Frequently there are no symptoms of extra-dural suppuration over and above those of aural and mastoid inflammation. Fever is usually absent. In children fever is commoner than in adults, just as fever is commoner in them also from uncomplicated aural disease or from mastoid disease. Cerebral pressure symptoms are usually absent. There may,

however, be headache, drowsiness, vomiting, slowing of the pulse, optic neuritis, stiffness of the neck, and even such disturbances as crossed paresis and speech troubles.

More important signs of extradural abscess, though seldom present, are swelling, pain and tenderness above the ear, due to penetration of the squamous portion of the temporal bone by the pus, or similar signs behind the ear, due to penetration of the abscess through the foramen of the mastoid emissary vein.

Diagnosis.—The cerebral complications mentioned above, viz. drowsiness, vomiting, optic neuritis and stiffness of the neck, do not enable a distinction to be made between this complication and those of brain abscess or meningitis. A very free outflow of pus from the ear may awaken suspicion ; but brain abscesses have sometimes discharged through the tympanum, or through bony fistulæ in the squamous portion of the temporal bone. From the practical point of view it may be said that if a patient has an extradural abscess we may expect him to present more or less strongly pronounced indications for opening up the mastoid process ; or, stated in the reverse way, in any case in which there are present indications of mastoid suppuration, especially if acute otitis media is the primary cause, one is not unlikely to find pachymeningitis externa or extradural abscess, and one should, at the operation, be careful to follow up any necrotic or fistulous tract which may pass to the extradural region.

This consideration brings us to inquire, What are the indications or signs which suggest that the mastoid process should be explored in acute suppurative otitis ? In the first place let it be understood that by acute otitis is meant not merely an otitis which has existed a few days. A patient has acute otitis so long as the tympanic cavity and membrana tympani are acutely inflamed, and these parts may continue in a state of acute inflammation for weeks or even months. The state of acute inflammation is obvious on examining the ear with adequate illumination through an aural speculum, and comprises swelling, redness and opacity of the membrana tympani, and of the adjacent parts of the meatus, with concealment of the

malleus, and probably with the presence of a pulsating light reflex, with or without a visible perforation of the drum-head.

The indications for opening up the mastoid and antrum are, of course, clear if a typical mastoid abscess is present. The auricle is then pushed outwards and downwards, the fold or crease between the pinna and mastoid is obliterated, and the skin is tense, swollen and fluctuant.

In the absence of the above typical signs of abscess the indications for operation are not so clear. We must all have seen cases of acute otitis, especially in children, in which there was not only pain and tenderness over the mastoid, but even swelling there, due no doubt to periostitis, and yet in such cases recovery has taken place without operation. We must conclude, therefore, that mastoid periostitis may exist without abscess in the mastoid, and may subside under antiphlogistic treatment if there is good drainage from the tympanum through either a spontaneous perforation or an opening made by paracentesis. If a perforation is present and inadequate it should be enlarged by paracentesis.

But if external mastoid periostitis may subside without opening up the bone there is another form of periostitis which indicates clearly that there is suppuration of the antrum, and that operation is required. I refer to periostitis of the deeper portion of the auditory meatus. The swelling from this narrows the meatus in its deeper part, and the swollen part, which has this special significance, is that on the upper and back part of the deep osseous meatus. This swelling is the so-called "sagging" of the posterior superior meatal wall, that is, swelling of that part of the meatus which lies nearest the antrum. The swelling is really the pointing of an antral abscess, and in some cases an opening forms there, pus escapes, and a fistulous tract is left.

In other cases of acute otitis the indication for operation on the mastoid is the presence of persistent pain, vertigo, tinnitus, vomiting, or nystagmus. The persistence of any one of these symptoms is an indication for operation.

It must be admitted, however, in spite of the help given by

such indications as those enumerated, that it is often difficult to decide whether the mastoid should be opened up or not in acute otitis. The operation required in such cases is not a difficult one which demands exceptional skill, but obviously the patient should be spared operation if that is possible with safety. The trouble is that a sudden development of cerebral symptoms may arise in a case of otitis which has been running an almost painless course. The important fact remains to be stated that you may wait with more safety for clear indications of mastoid suppuration before operating in young people than in people of middle or advanced age. In middle life the mastoid process is more likely to be sclerosed. If a mastoid with a thick cortex or a sclerosed cortex suppurates, the suppuration is more dangerous because the pus cannot so easily make its way to the surface and cause periostitis and mastoid abscess. Failing escape in that direction, the pus is likely, unless a timely operation is performed, to spread inwards through the labyrinth or by other routes, and give rise to dangerous intra-cranial troubles.

With respect then to elderly people, the wisest practice is to open up the mastoid if acute suppurative otitis has continued for five or six weeks without distinct signs of abatement, even though there is no mastoid tenderness, and no elevation of temperature. Lastly, in influenza and in diabetes it has to be remembered that dangerous mastoid complications may develop insidiously.

In children and young people the deciding factors for or against operation must be the tendency of the general and local symptoms to increase or decrease from day to day. The timely opening up of the mastoid process is to be regarded as the most important method of preventive treatment of the intra-cranial complications of ear-disease.

(2) **Infective Lateral Sinus Thrombosis.**—This complication is more commonly found in connection with chronic than with acute disease in the temporal bone, and in the great majority of cases the temporal bone itself is affected, not merely the muco-periosteum of the tympanum and mastoid cells. Very

frequently there is a perisinus abscess, and this is the cause of the thrombosis. The presence of pus or granulation tissue on the outer wall of the sinus naturally favours thrombosis. Another mode of origin appears to be the spread of thrombi into the sinus from small blood-vessels which pass into it from the temporal bone.

Thrombosis having begun in the lateral sinus, usually at the knee or in the sigmoid portion, tends to extend in various directions. It may spread backwards against the blood-stream towards the torcular, rarely to the longitudinal sinus, and to the transverse sinus of the opposite side. Extension, again, may occur along the superior or inferior petrosal sinuses, and through these into the cavernous sinus of the same side, then possibly to the ophthalmic vein, and to the cavernous sinus of the opposite side. Thirdly, the extension may be with the blood-stream into branches of the sinus, the mastoid emissary vein or the anterior condylar vein, but especially into the jugular bulb and jugular vein, even into the innominate vein, and also into the facial branch of the jugular vein.

Course and Symptoms.—Cerebral symptoms may arise from the presence and irritation of an inflammatory focus within the skull, through circulatory obstruction in the sinus, and possibly through accompanying meningitis serosa. The cerebro-spinal fluid is generally increased in amount. Headache is usual, diffused or limited to the affected side; vomiting in the early stages is also usual. In severe septicæmic cases delirium is a symptom, but in the cases running a more pyæmic than septicæmic course consciousness is not altered.

The cerebral symptoms are, as in all aural intra-cranial complications, more marked in children than in adults. Optic neuritis is not common in pure sigmoid sinus thrombosis.

The general course of the affection in the organism can be chiefly septicæmic in character or chiefly pyæmic, but it is rarely a pure form of one or the other.

The most characteristic sign of the pyæmic form is the occurrence of rigors with a sudden rise of temperature, followed by a sudden fall. The rigor may last from a quarter to

half an hour, or even one to two hours. Sometimes these rigors occur once daily, or there may be two or three days' interval between them, or there may be, on the other hand, two or three rigors in twenty-four hours. A case has been reported, and successfully dealt with, in which no fewer than sixty-five rigors occurred.

The spleen is usually enlarged, the pulse rises and falls with the temperature. Metastatic complications occur most commonly in the lungs only, much more uncommonly in other parts as well as in the lungs, and very rarely in other parts and not in lungs. The sterno-clavicular and shoulder joints are favourite seats of the secondary abscesses, but such may occur in the subcutaneous tissue, in other joints, in bursæ, and in muscles. Sometimes these metastatic inflammations do not end in suppuration. More rarely metastases have been found in the kidneys, spleen and liver.

Here may well be mentioned a clinical type of case to which Körner has directed attention, in which there is otitic pyæmia without sinus phlebitis. The patients are usually children or young people, the ear affection is acute, pyæmic deposits occur in the joints, bursæ and muscles, with absence of such, as a rule, in the lungs. The prognosis is favourable without operation on the sinus.

In the septicæmic type of sinus thrombosis, as distinguished from the pyæmic, the symptoms are those of an acute, rapidly fatal septic poisoning or toxæmia. There is high continuous fever, delirium, and a rapid small pulse; metastatic abscesses are not characteristic, but septic endocarditis, muscular hemorrhages, retinitis and retinal hemorrhages, nephritis and hepatitis are often present. The spleen is generally enlarged. Death is usual in a few days.

What is the duration and prognosis in cases of sinus thrombosis which have not been operated upon? Frequently the patient lives two to four weeks—in rare cases longer, even to several months. Death results from such effects as general septicæmia, from pyæmic metastases, especially pyo-pneumothorax, and from meningitis or brain abscess. The patients may

recover, and the sinus be permanently obliterated withou operation.

Now we come to the all-important questions of diagnosis and treatment. The diagnosis of the well-marked cases presents no difficulty. There is characteristic fever, splenic tumour, and signs of jugular thrombosis. There is a sign of thrombosis known as Griesinger's. It is the presence of localised swelling and œdema at the posterior border of the mastoid, in the position of the mastoid emissary vein. As a matter of fact, this sign is more an indication of an extra-dural abscess than of sinus phlebitis. If this swelling is not limited to the small area mentioned, but also lies over the mastoid process, then it points to mastoid disease only, not to either of the intra-cranial complications mentioned. Irritative or paralytic effects upon the nerves which pass through the condylar foramen or the jugular foramen may give help. The nerves which may be affected are the hypoglossal, spinal accessory, glossopharyngeal and vagus. Their involvement points to an extension of the sinus phlebitis to the foramina mentioned. The septicæmic type of case of sinus phlebitis may resemble typhoid fever, and the pyæmic type may resemble malaria. Examination of the blood will, of course, assist in the differentiation of these maladies.

The diagnosis of less advanced and less typical cases may be difficult. There may, for example, be no local signs or symptoms of a blocked sinus or vein, and the fever may not show the characteristic pyæmic curve. In this connection let it be said that one well-marked rigor should raise a strong suspicion of pyæmia, and that the occurrence of a second rigor should be considered a decisive indication for exploration. In children with meningitic symptoms lumbar puncture will serve to exclude meningitis.

With respect to adults, the rule should be to open up the mastoid and explore the lateral sinus if there is septic ear-disease present, or a recent history of such, and if fever is present of the continuous type not accounted for by the presence of some other disease, *e.g.* typhoid fever, pneumonia, influenza,

bronchitis or tonsillitis, etc. The septicæmic form of sinus thrombosis will very probably be found to exist in such circumstances. Further, in such cases, as well as in cases with pyæmic fever, an absence of mastoid tenderness and swelling must never be considered to contra-indicate operation. I feel I cannot lay too much stress on this point. I am convinced that I have myself delayed operation to the detriment of patients more than once, because there was no tenderness or swelling of the mastoid process, and I may be tempted to do so again. I have also seen house-surgeons and practitioners repeatedly fail to recognise the need for operation because there has been neither pain, heat, swelling nor tenderness over the mastoid process. No trouble or care must, of course, be spared to exclude other possible sources of the fever before operating.

The difficulty of diagnosis is increased by the fact that mastoiditis may be present when the otitis which caused it is subsiding or has subsided. In still rarer cases there has not been a perforation of the drum, and no inflammation of that structure has been previously recognised, nor is recognisable at the time of examination.

Lastly, let me say exploration is justified and desirable when there is a fair probability of the presence of septic sinus thrombosis, and that a careful exploration of the sinus is not a dangerous procedure.

To sum up. If in the course of a case of acute purulent otitis media (not at the beginning), or in a case of chronic purulent otitis, there is a sudden rise of temperature, say to 102° or more, accompanied by a rigor, with headache and malaise, and if non-aural causes for the temperature can be excluded, and there are no symptoms of meningitis or cerebral abscess, the mastoid should be opened up and the sinus exposed without delay. Children are an exception to the rule, for they may have a high temperature for a fortnight from acute otitis without complications.

If under such circumstances the exposed sinus is found tense and elastic one should wait to see the effect of the mastoid

operation. Most likely it will prove sufficient, and the patient will recover without thrombosis. If the temperature remains high during the following days, or if a rigor occurs, then the interior of the sinus must be explored.

We must now consider the treatment of the sinus when exposed in further detail. Some authorities state that you may have a depressed appearance of the sinus from compression, and a benign thrombus in it which is best left undisturbed. I should myself be too doubtful about the non-infective state of the thrombus to leave it undisturbed in such circumstances. The exposure of the sinus in the search for possible thrombosis should be free. The thrombosed part may be low down in the sigmoid sinus, between the lower bend and the jugular bulb, or the sinus itself may be free from thrombus, and yet the jugular bulb contain septic clot, infected perhaps through the floor of the tympanic cavity. I may state at once that I have never myself exposed the jugular bulb either to examine it for thrombus or to remove thrombus known to be there. I content myself with exposing the sigmoid sinus low down, and passing a curette from the lowest point exposed towards the jugular bulb from above. The spoon will not enter the bulb, but will pass to a point near it. To clear the bulb itself from clot I have hitherto relied upon passing a curette upwards into it from the jugular vein below. I consider syringing through from vein to sinus rather risky, for the dura might give way, and meningitis result. Operations for exposure of the jugular bulb have been specially described by Grunert and Piffl and Voss. A great drawback to those operations is the proximity of the facial nerve.

It is not always easy to decide whether there is thrombosis of the exposed sinus or not. If present the thrombus may block the lumen of the sinus, or be merely a parietal layer not blocking the lumen. The use of a needle and syringe for exploration for clot is safer than incision, and may well be employed first. If it does not yield sufficient information the sinus must be opened. If the needle shows the sinus to be blocked it must be freely laid open. The clot may be obviously septic in the middle part,

but apparently ending above and below in healthy clot. Some surgeons leave healthy-looking clot undisturbed, and remove only the broken-down portions. This appears to me to be taking too much risk of a continuation of septic thrombosis. You cannot be sure of the asepticity of the clot left behind.

If the exploratory needle withdraws healthy blood, normal in appearance and free from odour, we are faced with several possibilities. There may be parietal clot, not occluding the lumen. In my opinion the mere suspicion of that being the state of affairs does not justify opening the sinus and tying the jugular vein. I believe parietal clotting not infrequently occurs in cases which recover without opening up the sinus. Then the exploring syringe may draw off blood because the clotting is in the jugular bulb only. There are tests for the presence or absence of this condition—*e.g.* Whiting's test—but they fail to prove the presence or absence of a parietal clot in the bulb. There is only one way of proving the presence or absence of septic clot in the bulb—that is, by exposing and opening it. If in a particular case I felt fairly sure from the symptoms and signs that the bulb was infected, I should treat the case as one with thrombosis of the jugular vein, *i.e.* I should open the sigmoid sinus and jugular vein, and clear out both with the curette as well as possible, and drain both, and I have, of course, repeatedly done this. But some advocate more radical procedures; for example, laying open through one curved continuous incision the sinus, jugular bulb, and jugular vein.

The last matter in connection with the treatment of sinus thrombosis about which I wish to speak is the question of ligaturing the jugular vein. Some surgeons always tie the vein if thrombosis exists, others only in certain cases.

The following facts bear upon the question :—

(1) Almost as many cases of sinus thrombosis have been successfully treated without the ligature as with it. Statistics perhaps show a slight advantage from applying the ligature.

(2) Though ligature of the vein closes the main channel for the transmission of septic emboli to the lungs and other parts,

it does not close all channels. After ligation fresh infective material may, and does sometimes, pass to the heart from emissary veins, from the petrosal sinuses, or from the torcular end of the lateral sinus.

(3) The operation of ligature of the jugular takes time, and makes another wound, usually septic, and leaves a scar.

(4) The operation has certain dangers, viz. (1) it has been quickly followed sometimes by extension of thrombosis into the inferior petrosal sinus, and thence into the cavernous sinus; (2) the sudden stoppage of the flow of blood through the vein may lead to congestive œdema and necrosis of the brain. This is only likely if the other lateral sinus is abnormally narrow. Further, this danger cannot result from ligation if the vein or sinus is already blocked with clot. But many writers have advocated tying the vein for non-obliterating thrombosis.

In my own opinion the patient's best interests will be served if this main channel of embolic invasion is closed in nearly all cases. I would make an exception if the extent of the thrombosis in the sigmoid sinus was small, and healthy sinus wall could be seen above and below the diseased portion, and free bleeding could be established from both the torcular and jugular end of the infected sigmoid by curetting. I would not trust any clot in the sinus which obstructed the free flow of blood from both directions. If ligatured at all, the best time to place the ligature is immediately after the diagnosis is established, whether by palpation in the neck, or more usually by inspection of the sinus through the opening in the skull. It seems to me best to resect a portion of the vein to a level above the facial branch, after dividing that branch, but to leave the upper end of the jugular vein long enough to be brought to the surface in the upper angle of the skin wound for drainage purposes.

DISCUSSION.

Dr. CAREY COOMBS, after congratulating the Society on the excellence of the two introductory papers, said that a brief review of the autopsy figures of the General Hospital would form

the basis of his remarks. There were thirty-four cases in which intracranial complications of middle ear inflammation had proved fatal. In these cases sinus thrombosis was found seventeen times, abscess in the substance of the brain, or cerebellum, in fifteen cases (temporo-sphenoidal lobe nine, cerebellum five, both temporal lobe and cerebellum one). In three cases there was a surface abscess, extra or sub-dural, and in only sixteen cases was diffuse meningitis noted. This latter was most often basic, and was usually accompanied by one of the more localised lesions mentioned above ; presumably in some cases meningitis had only occurred subsequently to abscess formation or sinus thrombosis. He had been surprised to find the incidence of meningitis so small. Testing the matter from another point of view, he had found that only five out of fifty cases of fatal meningitis were otitic in origin. The main inference drawn from these figures was that in most cases there was a stage during which the infective process within the skull remained localised in its effects, and therefore open to a successful surgical attack. With regard to successful treatment of meningitis (if it were indeed possible, as has been claimed of late), early diagnosis would always be the important factor. He mentioned rigidity of the neck with tenderness of the sub-occipital muscles and polymorphonuclear leucocytosis in the cerebro-spinal fluid as valuable signs by reason of their early appearance. He asked two questions : What was the evidence on which it was claimed that such a phenomena as " serous meningitis " occurred ? and Was it possible, in the experience of members of the Society, to save lives threatened by a spreading meningitis by early operation ?—Mr. HEY GROVES pointed out that in view of the uncertain diagnosis in many cases operative exploration of the lateral sinus and cerebrum and cerebellum, on the lines advocated by Mr. Percy Dean, was often advisable.—Dr. STACK related a case in which the symptoms resembled in every way cerebral abscess following mastoid disease. On four different occasions the brain was explored, altogether in about twenty directions, including both cerebella, both temporo-sphenoidal and both frontal lobes. No abscess

was found. The case was presumed, therefore, to be œdema. Dr. J. O. SYMES referred to the rarity of intra-cranial lesions with acute otitis, although frequently there were transient attacks of cerebritis or meningitis clearing up without operation. Probably all cases showing optic neuritis should have a mastoid operation performed, and if improvement did not result, then later the dura should be incised. He compared the symptoms of meningitis and those of cerebral abscess, the distinctive points in the latter being the regular, slow, full pulse, low temperature (in a cerebral abscess there is a rise of temperature on the opposite side of the body), motor paralysis, perhaps with loss of localisation of touch, slow disappearance of the superficial reflexes on one side only, and unilateral optic neuritis with moderate swelling of the disc. He described a case of cavernous sinus thrombosis, which made a good recovery, and mentioned that when vaccine therapy had to be employed in intra-cranial suppuration the vaccine was generally a compound one. In a case of cerebellar abscess under his care the organisms were a bacillus, a diplococcus, and the bacillus pyocyaneus; in a case of meningitis the organisms were a staphylococcus and the pneumococcus. — Dr. WATSON-WILLIAMS remarked on the difficulties that many cases of intra-cranial infection secondary to aural suppuration presented—firstly in determining the existence of intra-cranial lesions, and secondly in differentiating between sinus or perisinus suppuration, sub-dural or lepto-meningeal abscess, and abscesses of the cerebrum or cerebellum; and illustrated these points by citing various cases in which these difficulties arose, and on which he had been called to operate from time to time. One group to which he directed notice consisted of those cases where acute complications arose in chronic purulent otitis in both ears. One had then to determine which ear was the source of the intra-cranial complication, the diffculties in differentiation being greatly increased when the patient was semi-conscious. He believed that one of the most valuable differential diagnostic aids was the presence of optic neuritis restricted to or most marked in one disc, and the ipso-laterality of the intra-cranial lesion was sometimes

the only guide as to the side requiring intra-cranial exploration. —Mr. A. J. WRIGHT pointed out that it had been estimated that 7 per cent. of the cases of suppurative ear disease had optic neuritis.—Mr. C. H. WALKER and Dr. WALKER HALL joined in the discussion.

REPLY.

In reply, Dr. Michell Clarke said that Dr. Coombs's statistics with a fewer number of cases fairly corresponded in proportionate frequency of affections considered to those given by Dr. Logan Turner at the discussion in London. He had not had enough personal experience to allow him to express an opinion as to serous meningitis. In the cases of diffuse septic meningitis he had seen the issue was lethal. Dr. Stack's case was a good illustration of the difficulties of diagnosis in intra-cranial abscess. With regard to optic neuritis, he thought that if an individual case it was of unequal severity on the two sides that point was of more importance in the differential diagnosis than the intensity of the swelling. In reply to Dr. Edgeworth, the plantar reflex in an uncomplicated lesion of a lateral lobe of the cerebellum would be of the flexor type. Dr. Wright's statement that optic neuritis was present in seven per cent. of cases of middle ear suppuration was one of the points which he had hoped would be brought out in the discussion, and was of great importance. There was no doubt that the public were still much too careless about chronic otorrhœa.

THE DIFFERENTIAL DIAGNOSIS OF SWELLING IN THE BREAST.

BY

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THERE are certain chronic swellings in the breast which we frequently meet with—cysts, fibro-adenoma, localised sclerosing mastitis, and scirrhus. A breast swelling may, of course, be a

chronic abscess, or a sarcoma, or a duct carcinoma, or the soft form of glandular carcinoma, or some other very rare form of tumour; but it will probably be one of the first four forms I have mentioned. Acute suppuration in the breast is hardly likely to lead to any serious difficulty in diagnosis, but we must recognise the fact that now and again, with a rapidly-growing malignant tumour of the breast there may be quite marked redness of the overlying skin and œdema, so that on first looking at the breast we may feel sure the patient has an abscess in it. I remember some years ago a woman who came up as an out-patient at the Hospital, with what looked like an abscess of the breast. The skin was bright red and œdematous, but it overlaid a firm malignant growth. I also saw in consultation with one of my colleagues a few years ago a woman aged 39, with a red brawny condition of the skin overlying the breast. It certainly looked inflammatory, and before she came to the Hospital her own doctor had incised it, thinking it was an abscess. Indeed, when I examined her there was a soft fluctuating area which strongly suggested abscess. But there was no pus, and the whole condition was one of malignant growth. About the same time I also saw another case of a woman aged 49, who had a fluctuating boss protruding from a large swelling of the breast, and over it the skin was red. However, only serous fluid had been withdrawn by an exploring needle. It was found when removed to be a carcinoma, with a degeneration cyst. Quite recently I have had another very striking case of this kind. A woman, aged 65, was sent to me with a tumour of the breast of several months' duration, and its superficial part was soft and fluctuating. While waiting for admission she came to see me again, with the skin overlying it bright red and slightly œdematous, giving it quite the appearance of a pointing abscess. Two medical men and five senior students who examined her were quite sure she had an abscess in the breast. But she had enlarged and hard glands in the axilla, marked retraction of the nipple, and serous oozing from the nipple. I removed one of the axillary glands to see if it contained growth, but did not find any. I then (at the

same operation) removed the breast, and after removal cut it open, and found a soft white malignant tumour, with a small degeneration cyst, containing clear serous fluid. I then completed the usual operation for cancer of the breast. I might have simply dissected out the tumour, and then cut into it, but it was so large that this would have been a removal of half the breast, and I should probably have obstructed the main ducts of the other half by the contraction of the scar tissue, and therefore I removed the whole breast, which at her age was no great loss to her. I am sure there is danger in putting an exploring syringe needle into a tumour you suppose may be malignant, as cancer cells may be diffused through the puncture. The danger, perhaps, is not great if you are prepared at once to remove the tumour if necessary. but there must even then be some slight risk of dissemination. To cut into the swelling before removal involves greater risk of dissemination. The safe way is to cut out the suspicious lump, and then cut it across. Even if it is not malignant, its excision is generally the best treatment. In this case if it had turned out to be a chronic abscess, excision would have been the best treatment. When, however, the swelling lies under the nipple, so that its excision would damage the main ducts, or when it involves a very large portion of the breast, the removal of the breast is indicated, and the pectoral muscle and axillary contents, and more skin, can be removed if the tumour is found to be malignant. The tumour in this case was clearly malignant, though it was certainly not scirrhus, and the probability seems to be that it was an endothelioma, but it would probably be called a sarcoma by some pathologists. No growth was discovered in the enlarged axillary glands.

Before I further consider the differential diagnosis of swelling actually in or on the breast, I must draw attention to the fact that disease of a neighbouring structure may simulate a tumour in the breast. Those of us who used to read Erichsen's *Surgery* will remember that he relates how, in University College Hospital, a man was supposed to be suffering from scirrhus of the breast. The lump in the breast was explored,

and was still considered to be scirrhus. The breast was therefore removed, but on further examination after removal a small cavity was discovered in the pectoral muscle, and at the bottom of this a small sequestrum was found in the rib. It was, in fact, a case of "quiet" necrosis of a rib, with fibroid thickening in the overlying breast. The breast may be greatly pushed forward by an abscess beneath, and it is important not to mistake this for enlargement of the breast itself. Such an abscess, if chronic, may of course be due to tuberculous disease of a rib. An acute abscess may, however, be sub-mammary, and then, together with the pushing forward of the breast, there would probably be œdema at its base, but it might be quite difficult to get evidence of fluctuation. Such an abscess might arise from suppuration starting in a part of the breast just overlying the pectoral muscle. I once had a case of sub-mammary abscess, with much surrounding induration, sent to me as a case of scirrhus deep in the breast. An indistinct feeling of fluctuation, with one hand on the breast and the other on the edge of the sub-pectoral swelling at one particular spot, suggested the presence of pus. And a very remarkable case came under my care in the Hospital some years ago, in which a cyst in the pectoral muscle simulated a tumour of the breast, and I proceeded to remove it, thinking I was dealing with a tumour of the breast, but I cut through the breast and found no tumour. I then cut through the pectoral fascia beneath and found an hydatid cyst lying in the substance of the pectoral muscle.

It is, I suppose, well known that a simple serous retention cyst of the breast may be so hard from tension as to feel like a hard solid growth. Numerous instances are on record in which this mistake has occurred. The tense cyst does not even feel elastic, much less fluctuating. Hence it is never wise to give a definite opinion that a hard lump in the breast is necessarily scirrhus. I have removed such lumps, which had been confidently diagnosed as scirrhus, and found them tense cysts, and I feel very strongly that it is never wise to perform the complete operation for cancer of the breast without first excising

such a lump, in case it turns out to be an innocent tumour. I used to cut into the tumour, but now I always excise it first. The only possible risk in doing so is diffusion of cancer cells lying in the lymphatic vessels between it and the glands by their division; but if the growth is found to be cancer all the surrounding tissue will then be excised, and if the cancer cells have already invaded the lymphatic vessels we must regard the growth as already diffused beyond what is visible and palpable, and it can matter little if we cut through such infected lymphatics. It is certainly better to cut out the growth, and then cut into it, than to subject the patient to so extensive an operation as that for mammary cancer without any need.

But it is not only scirrhus that a tense cyst may simulate. I have known a tense cyst projecting from the breast mistaken for fibro-adenoma by several surgeons who examined the case on two occasions. In one the supposed fibro-adenoma was found on removal to be a cyst, and in the other the tumour, which was the size of a hen's egg, almost completely disappeared.

Not only may a cyst when tense feel like a solid growth, but a chronic abscess may also. Moreover, a chronic abscess may simulate a scirrhous growth because it may be associated with some retraction of the nipple. Overlying œdema may, however, suggest chronic abscess. In a clinical lecture on the differential diagnosis of swelling of the breast which I published in the *Clinical Journal* in 1897, IX., 327, I referred to two cases of chronic abscess of the breast under my care which simulated solid tumours. One was the case of a young woman 23 years of age who came to the Hospital with a firm, round, finely-lobular swelling, the size of a small hen's egg, deeply situated in the breast. There was no fluctuation—not even an elastic feeling on firm pressure. It had been noticed for a month, and there had been shooting pains in it. Both nipples looked retracted, but were really undeveloped. She was single, and had never suckled. An incision evacuated several drachms of watery pus, which had been contained in a smooth walled cavity. There was not much induration of the breast tissues around,

and the solid feeling was due to the great tension within the cavity. The other case was that of a woman aged 43, who came to the Hospital with a small lump in the breast which she had noticed three weeks before, and it had been quite painless. There was a hard, smooth, round nodule, the size of a small marble, projecting from the breast close to the nipple. It was not tender, and there was no redness of the skin over it. As in the other case, there was no fluctuation, and it was not even elastic or firm on pressure. The skin was a little drawn in over it. It was found to contain thick pus. Some surgical writers state that chronic abscess usually occurs in connection with lactation, but statistics do not bear out this statement. In neither of these two cases was the patient suckling.

But not only is a fluid swelling not always fluctuating, but a fluctuating swelling is not always a cyst or abscess. A solid growth (usually malignant) may be soft enough to fluctuate. I hope it is now well recognised that a soft solid may fluctuate just in the same way that a fluid may. Fluctuation is not a " fluid wave " as it is sometimes said to be. It is nothing more than the alteration in the shape of a solid, or a collection of air, or fluid, made by pressure upon it. You press down the substance at one point, and with the finger of the other hand you feel it rise up at another. This is all fluctuation is, and you can never get it more perfectly than in a soft lipoma. The mistake one is apt to make is that one sometimes moves the body as a whole, and then imagines that one has altered its shape by pressure. For instance, you press a solid gland with one finger so that it moves as a whole, and you will get the pressure conveyed to the other finger, and may think you have fluctuation.

We must never forget that we may have a cyst of the breast combined with a solid malignant growth. Such a combination may occur in sarcoma, and then the cyst is usually part of the tumour formation. But in carcinoma, occasionally, you may get a degeneration cyst. The tumour tissue breaks down, and a serous cyst is found, without any distinct capsule,

but with a wall of tumour tissue. And such a malignant growth may present mainly as a cyst. I have in more than one instance made the diagnosis by the exploring syringe. After drawing off the serous fluid, I have found that some portion of the swelling remained, and on operating have found the combination of carcinoma with a degenerative cyst. But I have come to the conclusion that if there is reason to suspect the cyst may be only part of a malignant growth, it is better to remove the tumour, and then cut it across and thus determine its nature, for I think malignant cells may be disseminated through the needle track, together with fluid from the cyst.

A soft, elastic, non-fluctuating swelling projecting even from the surface of the breast is quite likely to be a common fibro-adenoma. But a fibro-adenoma may also be quite firm. Such a growth, *i.e.* a firm growth projecting well from the surface of the breast, without any tethering of the overlying skin, or retraction of the nipple, or any enlarged glands, is almost certain to be diagnosed as a fibro-adenoma; but it may turn out to be carcinoma. I had one very striking case of this kind. A woman only 32 came under my care with a nodule the size of a large marble projecting from the surface of a thin breast. It was firm but not really hard. There was no dimpling or tethering of the overlying skin. As it was at the periphery of the breast, the absence of retraction of the nipple was of no importance. There were no glands. I felt sure it was a fibro-adenoma, and even felt doubtful if it should be removed; but I did remove it, and it turned out to be a scirrhus nodule, typical both to the naked eye and on microscopic section.

It is often stated in the books that a fibro-adenoma "moves on" or "in" the breast, and that this is a valuable diagnostic sign. I have removed a good many fibro-adenomata of the breast, but I have never yet seen one that could be moved on the breast: they are always sessile on its surface. In order that it may move on the breast the tumour must obviously be either pedunculated or lying loose on it. Neither condition exists. The idea that a fibro-adenoma moves on the breast

is due to the ease with which when you grasp the tumour you move the underlying breast tissue with it, without recognising that you do so. The tumour forms such an excellent handle you can move the surrounding portion of the breast freely if you grasp it; and there is nothing that will give you evidence of movement of the surrounding breast tissue, and hence you do not realise that you are moving it also, but imagine that you are moving the tumour on it, or in it. I think it is because a fibro-adenoma is a surface tumour that one is apt to get the impression that it moves on the breast. When a tumour is imbedded in the breast, as a cyst often is, it is easier to recognise that one is moving the surrounding breast tissue with it.

An ill-defined outline of a swelling of the breast certainly suggests that it may be sclerosing mastitis, rather than a tumour. It is sometimes stated that you cannot feel such a swelling with the flat of the fingers, but only on taking up the breast between the thumb and finger. A swelling of such a character could certainly hardly be anything but sclerosing mastitis; but we must remember that every now and again a lump of sclerosing mastitis may be so perfectly well defined and so hard, that without exploration it may not be possible to say it is not scirrhus. This is another reason why we should always cut out a hard lump in the breast which we think is cancer, and then cut it across before proceeding further with the operation. We must remember that cysts and sclerosis mastitis often exist together in the same breast. The multiplicity of hard lumps would certainly suggest that they might be sclerosing mastitis rather than malignant growths, but I have seen several cases where two scirrhous growths were present in the same breast. In a case in which we were in doubt as to the diagnosis between sclerosing mastitis and scirrhus, after cutting across the excised lump, an immediate microscopic section might settle the question; but the microscopic diagnosis between sclerosing mastitis and cancer, in an early stage, is notoriously different, and it might be that only after a very careful examination of a large number of sections taken from different parts of the lump that a definite diagnosis could be made, and even then

it might not be quite certain. Of course, if we had any doubt after examining an immediate microscopic section we should act wisely in performing the complete operation for cancer, recognising the fact that cancer occurs in quite young women—under 30—sometimes. We must never allow age to settle the diagnosis in a doubtful case.

Scirrhous cancer usually occurs as a hard lump—often stony hard—and it is frequently evident that it is in the breast, but sometimes it may seem only to project from it, and in that way to resemble a fibro-adenoma. A very hard solid tumour is nearly always scirrhus, but as I have already pointed out a tense cyst may feel quite hard. I once, however, operated for removal of a very hard growth which I expected to find was scirrhus, but found an ossifying sarcoma. I have fully recorded the case in the *Transactions* of the Pathological Society.

A scirrhous growth is sometimes irregular and even nodular, and when the overlying skin is moved, it is sometimes found to be tacked down, as it were, to the lump, or the nipple may be retracted. It is necessary to be cautious in drawing conclusions from an apparently retracted nipple. We must always make sure it has ever been protruded, for sometimes what you think is a retracted nipple is really a long-standing abnormality. If no glands can be felt in the axilla in a case of suspected cancer of the breast, it is no evidence that the growth is not cancer. I frequently have operated on cancer of the breast without palpably enlarged axillary glands. On the other hand, distinctly hard enlarged axillary glands, with a doubtful lump in the breast, are of considerable diagnostic importance. It is well to remember that it is the pectoral group—the group lying just under the border of the great pectoral muscle—which is likely to be first affected, though lymphatics may pass from the upper segment of the breast direct to the highest axillary glands—the sub-clavicular group lying just above the upper border of the pectoralis minor. Whether a growth of the breast seems to protrude from its surface will very much depend on the amount of fat with which the breast is incorporated.

A growth which really projects well from its surface may yet feel imbedded in it, for it may be buried in the surrounding fat, which it is impossible to recognise apart from the breast. As I have already pointed out in speaking of cysts, if we are in doubt as to the nature of any swelling of the breasts which might possibly be cancer, it is best to excise it, and then cut it across, and if necessary have an immediate microscopic section made, being prepared to do the complete operation for cancer if it should be shown to be malignant. If it is a question whether it may not be a tense cyst, it might be wise to see the patient again after a short interval, to try again for any evidence of fluctuation; but it is not wise to leave indefinitely doubtful swellings in the breast which may be cancer, in the hope that in time the nature of the swelling may be evident. The patient has probably already delayed showing it to her doctor, because it gave her no pain, and therefore she thinks it cannot be anything serious, whereas one seldom finds any pain with early scirrhus.

Sometimes we are consulted by middle-aged women about a puckering in the skin over some small area of a fat breast, and we can feel no lump beneath. But such a condition is most suspicious of a small scirrhous growth deep in the breast, buried under the fat; and in such cases the breast should always be explored with a view to the performance of the complete operation for cancer. I have seen more than one case of this kind, and found a small scirrhous growth imbedded in a fat breast on exploration.

What is the diagnostic value of serous discharge from the nipple without any swelling as a sign of cancer? I do not think even in a middle-aged person it is suspicious enough to make it wise to remove the breast, but in addition to a swelling of the breast it is, I think, an unfavourable sign. Discharge of blood from the nipple, even without any tumour, I should regard as more suspicious than serous oozing, but an innocent papilloma growing in a cyst near the nipple, too small and too deeply placed for detection, might account for it. Bleeding from the nipple occurs in duct carcinoma, but there would certainly be a

palpable tumour, and it is quite one of the uncommon forms of breast tumour. I should certainly watch very carefully the breast in a case of bleeding from the nipple for the appearance of any swelling, but I do not think I should at once excise it unless there was also a lump in it.

There is so much difference of opinion as to the nature of Paget's disease of the nipple that it is difficult to write anything definite about it. What Sir J. Paget originally described was an intractable eczema of the nipple, which was very often found to be associated with ordinary glandular cancer in the breast. And yet the nipple is sometimes destroyed by ulceration, which shows that the morbid process is certainly more than an eczema. The term "malignant dermatitis" is a bad one. It must be either one or the other, either dermatitis or the ulceration of a malignant growth, though possibly the latter might be engrafted on the former. I have had one case under my care in which there was a raw, scabbed condition of the nipple, so that when the scab was removed, the nipple looked like a raspberry, and there was a hard lump unconnected with the nipple in the breast, and hard axillary glands. The woman was 69 years of age. It was a primary epithelioma of the nipple, and the lump in the breast was secondary epithelioma, and there was secondary growth in the glands. The true nature of the case was only discovered by microscopic examination of the parts removed at the operation. When I cut into the lump in the breast at the time of the operation I was much puzzled by its appearance. I had never seen such a tumour in the breast. It was a firm white growth, and contained numerous very small, smooth lined, cavities, which contained material like dirty cream cheese. Such a substance is sometimes found in secondary epitheliomatous glands, but not usually in little cavities with such definite walls. It is, of course, due to a fatty degeneration of the growth.

If a rapidly growing tumour of the breast has not the character of scirrhus, if, in fact, it is soft or elastic or perhaps bossed, can we diagnose its nature before operation—as to whether it is encephaloid carcinoma, a duct cancer, sarcoma or

endothelioma ? In sarcoma it is stated that the glands are not usually affected. But in the *Transactions* of the Pathological Society some years ago I recorded a case of sarcoma of the breast, with marked secondary growth in the axillary glands, and on the other hand I should certainly clean out the axillary contents in operation on such a tumour, whether I felt enlarged glands or not, for I think it is possible that with even a rapidly growing encephaloid cancer there might possibly be no glands palpable, though this would of course be unlikely. In duct cancer there is often a bloody discharge from the nipple. I really do not think we could determine the exact nature of a malignant tumour of the character I have just described. It is certain that fluctuating bosses on it may be soft solid growth, and not cysts, as we are likely to suppose them to be. In dealing with such a tumour, if it was too large to cut out and examine at the time of operation, I am sure the best plan would be to do the complete operation for cancer. If the growth is shown by careful examination after removal to be a duct carcinoma, we may feel very hopeful as to prognosis. Indeed, it is a question whether it is necessary to remove the glands and the pectoral muscle in such cases, but perhaps it would be wise to do so, even if we were able to make the diagnosis of duct cancer with certainty before operation.

It is impossible to write about the diagnosis of swellings in the breast without reference to the possible change from an innocent into a malignant tumour. There is no doubt that often swellings which have been regarded as innocent tumours have been found to be malignant when removed, and again and again it has been stated that they have changed from one into the other. This is, of course, quite possible. The history we get sometimes, that for a great many years a swelling has existed in the breast of much the same size, and ultimately taken on rapid growth, and is found on removal to be malignant, certainly suggests such a transference. When such a tumour is removed there may be no sign of anything but the malignant form of growth, all sign of an innocent form, if it ever existed, may have disappeared. If one did get a growth with such a

history, and it showed innocent growth in one part and malignant in another, it would of course be conclusive evidence. But because a lump in the breast has been diagnosed as a patch of sclerosing mastitis or a fibro-adenoma, and watched as such for many months, or even a year or two, and is then found on removal to be malignant, is not to my mind sufficient proof that it was ever an innocent growth. We know how variable is the rate of growth of malignant tumours, and how easy it is to make a mistake in diagnosis. If we cannot keep what we diagnose as an innocent tumour of the breast under observation, so as to examine it every few months, it seems safer to remove it, for knowing that a lump already existed, any change in its character would not be recognised by the patient herself, and possibly any suspicious sign which might develop might not be recognised by some other medical man the patient might happen to consult.

With regard to the multiplicity of breast swellings, I think we may say that cysts are very often multiple, and in both breasts; patches of sclerosis mastitis frequently are multiple, and that it is not very rare to meet with more than one fibro-adenoma in the breast. As I have already mentioned, I have seen several cases of two scirrhous growths in the same breast, so that we must not on account of there being more than one primary growth entirely negative carcinoma. I have several times operated on cases in which there was a cancerous growth in both breasts at the same time.

This paper deals with swellings in the breast, and not with general enlargement of the breast, which may be due to simple hypertrophy, and then both breasts may be greatly enlarged, and in some cases they are very painful. But it is important to point out that the whole breast may seem enlarged, when really it is a large fibro-adenoma growing in it. I removed such a tumour some years ago from a case I at first thought was one of general enlargement of the breast.

We may now perhaps with advantage consider the value of separate signs. Retraction of the nipple (not undeveloped nipple), or retraction or tethering of the overlying skin, is an

important sign of scirrhus, but has been known to occur in chronic abscess, or even simply with sclerosing mastitis. As I have already pointed out, puckering of the overlying skin may be the only sign of a deeply-buried scirrhous growth. In cancer we may have quite hard enlarged glands, but the glands may also be decidedly enlarged in chronic abscess, and they are said to be particularly so in tuberculous disease. But we must clearly recognise the fact that we may not find any enlarged glands in early cancer. Redness and œdema of the overlying skin is certainly suggestive of suppuration, but both conditions may be present with a non-suppurating malignant growth. The hardness of a lump is suggestive of scirrhus, but a very tense cyst may be as hard. What is sometimes spoken of as the weight of a tumour of the breast is supposed to have some diagnostic importance, but we must remember that a fat breast itself is quite heavy. Mobility of any tumour in the breast, or on it, I do not believe exists, except in very rare cases in which it happens to be pedunculated. I have never seen such a tumour of the breast. With regard to the one symptom, pain, it may be said that it is not usually present in early cancer, and is much more often present in a tense cyst. It is most important to remember this, and not to be misled, as the patient probably is, by thinking that because there is no pain it is not a serious condition.

I have not myself had a case under my care of tuberculous disease of the breast, and I do not see how it would be possible to make a diagnosis of a solid tuberculous deposit. Enlargement of the glands, which is said to be marked in tuberculous disease might suggest cancer. If it did, excision of the lump would be excellent treatment, and the diagnosis could then be made. Any chronic abscess might of course be tuberculous.

There is, I think, nothing special to be said about the diagnosis of swellings in the male breast. We must remember that scirrhus occurs in the male as well as the female breast. I had some years ago a very remarkable case of syphilitic sclerosing mastitis of the male breast. The patient had typical gummata in other parts of the body.

AN ENEMY OF THE PEOPLE—TUBERCULOSIS AND NATURAL SELECTION.

BY

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A FULL belief in the desirability of a campaign to oppose the undue prevalence of tuberculosis is no bar to a dispassionate inquiry into the question whether we are to anticipate absolute extinction or only modified control.

On the one hand,[1] [2] with "infection" and "dosage" as the chief factors to be considered, we are promised that a comprehensive, co-ordinated scheme, comprising notification, the anti-tuberculosis dispensary, the sanatorium for early cases, the school for tuberculous children, the farm colony for working patients, and the hospital for advanced cases, will, if systematically taken in hand, completely eradicate the disease within a relatively short period.

On the other hand, we are reminded[6] that no two diseases agree exactly in the wideness of their distribution, or in the nature and extent of the "adaptation" by which, following the laws of parasitism, they maintain against heavy odds their existence as a species. We are reminded, further, that under the selective influence of disease persisting in the environment, certain races have already attained a condition of enhanced resistance over races not yet subjected to selection; and that attempts which only lessen risk of infection, without absolutely removing all risk, may in the event prove unwisdom for the race, however beneficial to the individual.

An early warning note to social reformers was sounded by Herbert Spencer,[10] who pointed out that a rational policy must recognise certain general truths of biology, and that it by no means follows, because a certain number of deaths by disease have been prevented, that so much pure benefit has been

secured; for the net result of measures which tend to level down resistance, and to increase the numbers of the less resistant, may be merely the production of a somewhat larger number of a somewhat weaker race. The hope of the social reformer who trusts that the work of disease-control will be easier for future generations may be rudely shaken.

In favour of the anti-tuberculosis campaign, the notable and fairly steady decline since 1838, in the death-rate from this disease, which in 1895 showed a diminution of nearly two-thirds, is assumed to need only the stimulus of combined and continuous effort in order to blot out the disease.[2] This decline has been attributed by Ransome and others to "improved sanitary circumstances," and Newsholme has shown close correlation to exist between the fall in the phthisis death-rate, and such as conditions having influence on the well-being of a population the price of wheat, value of wages, institutional segregation, and so on. But Newsholme himself has pointed out that the decline from phthisis has shown no constant relationship to the decline of the general death-rate, and that whereas all countries have shown a decline in the general death-rate apart from phthisis, Ireland and Norway have varied from other countries in showing an increased phthisis rate.

Karl Pearson[3] also criticises the assumption that close correlation necessarily demonstrates causal influence, and proceeds to dissect the various factors involved in the declining rates. In a series of graphic charts he compares the decline in the general death-rate with the decline in the phthisis rate over three fairly equal periods between 1835 and 1910, and shows that while for males and females the general death-rate has continuously declined, with an accelerated rate for the middle period and a still greater acceleration for the later period, the rate for phthisis, though continuously declining, is doing so at an accelerated rate for the middle period, but at a considerably retarded rate for the third period, during which, indeed, it is tending to become stationary.

Further, on comparing the phthisis rate with the general death-rate as a percentage, it is found that while the second or

middle period shows accelerated decline, the third period, that of greater knowledge and higher activity against tuberculosis, shows a relative increase, especially in the case of males, whereas if the tuberculosis campaign were exerting a causal influence on the phthisis rate, there should be increased relative improvement.

Pearson concludes that the curve of phthisis decline is not showing any tendency to finally cut the horizontal line, *i.e.* to achieve extinction, but rather to become parallel to it. Furthermore, we cannot suppose the steady increase as we go backwards to 1838 to have been prolonged indefinitely, otherwise total extinction of the race from phthisis would have happened. On the contrary, we may assume that there has assuredly been a time in this country when the phthisis rate was *rising*, just as it is now falling. We may, indeed, with the periodicity of other infective diseases in view, clearly realise the possibility of a typical " epidemic curve " in the frequency of phthisis, our years of registration experience coinciding with a down-grade.

Indeed, quite independently of any " sanitary " measures, it is fair to assume that, given a definite population and a definite number of infected persons to start with, under control of the ratio of non-immunes to the population at large (a ratio in its turn assumed to be dependent on the effect of natural selection through many years of ubiquitous tuberculosis), the percentage of infected persons tends either to rise or to fall, but in both cases to reach finally a certain more or less stable value, and to maintain itself for some time at this value. This appears to be a general truth in the case of widespread endemic disease, and in epidemic disease which has escaped control upon introduction.

The ubiquity of tuberculosis.—Immunity to disease can only be acquired as a racial character in the presence of selection; that is, the disease must persist in the environment. The degree of immunity attained by any given race will vary directly as the extent of the infection and the time during which selection has acted.

Tuberculosis in the Northern European races is so universal,

that compulsory notification, while it reveals the clinical cases, gives no indication as to the full extent of its prevalence.

Careful *post-mortem* examination[6 7 8] has shown that unsuspected tubercle has existed in a large proportion of persons who ultimately die of quite other diseases. Bouchard gives a percentage of 75 from the Paris Morgue of persons, generally having died suddenly, in whom tubercular lesions, active or obsolete, were found. Ribbert, by systematic inspection, found that practically 100 per cent. of adults were affected. Nägeli laid down the principle that every adult is tuberculous, and Bertzke, from hospital experience, found in adults a percentage of 70 per cent. Brouardel further points out that in the majority of cases the lesions are not small disseminated foci, but large cicatrices, or wide, completely cicatrised cavities. It would appear that such ubiquity ensures the certainty of infection, in towns especially, once at least, perhaps many times, during life. Phthisis is, then, apparently self-curative in such races, even in advanced cases, and as phthisis accounts for only some 8 or 10 per cent. of the total deaths at the present time, a marked degree of resistance has somehow been attained.

This may be compared with the susceptibility in races where the disease has comparatively recently been introduced. Lawrason Brown[4] asserts that the morbidity and mortality among the American Indians from all forms of tuberculosis exceeds greatly those among the whites, and even the very high rates among the American negroes. The death-rate from pulmonary tuberculosis per 10,000 among the whites is approximately 17, among the negroes 40, while among the Indians it is 79.

In England and Wales in 1838 the rate was not quite 39, and this in 1895 had fallen to below 14.

Immunity, Selection and Environment.[6]—Racial immunity to disease must apparently result from the effect of natural selection acting upon the inborn variations occurring in individuals. It is improbable that the inhabitants of this country were more resistant to tuberculosis than the American

Indians when first the disease became prevalent. Resistance varied, and the most resistant survived to produce offspring whose inheritance of the characters of their parents, with variations towards more or less resistance, led to survival of the more resistant, and so on from generation to generation.

The process of selection is still going on, and immunity has not been attained by the race ; but though large numbers die who have varied in the wrong direction, the mean of the race has been raised.

Apparently what ought to happen is that complete immunity should be attained by the race if the selection is sufficiently stringent and lasts long enough ; but what does happen appears often to be that in place of attaining complete immunity, the race may develop an innate aptitude of acquiring immunity to the disease in so high a degree that the mortality is negligible in its effect upon the race. The example of measles may be quoted, and of malaria on the West Coast. [6]

Anything that diminishes the chance of infection generally in an immune race will tend to lower the racial standard ; hence, it is argued, [6] there is reason for doubt as to the wisdom of adopting general measures to lessen the risks of infection in the case of those diseases where it is impossible to hope that *all* risk of infection can be permanently removed. In the case of tuberculosis, it is doubtful whether anything more than a lessening of the risk of infection could be accomplished. We have already attained a high degree of immunity, and merely lessening the risks of infection without destroying them altogether would result in a lowering of the resisting power of the race, and might eventually end in disaster. In addition, by keeping alive for some time longer susceptible individuals at reproductive ages, one result is, as phthisis by no means lessens reproductive aptitude, to add to the population more individuals destined to succumb to infection.

Sandilands, [11] on the other hand, disputes the effective influence of natural selection in producing immunity, otherwise he claims that phthisis and plague over some thousands of years should not have failed to produce respectively immune human

and rat populations. The failure, he argues, may be explained by the fact that the operation of natural selection against infectious disease invariably tends to defeat its own ends. The total extermination of susceptible individuals before they can reproduce themselves can only be attained by ensuring their exposure to infection *before the age when reproduction becomes possible.* If the first massacre falls short of total extermination, the course of subsequent epidemics is baulked by the presence of immune persons. Susceptible members of the community do not come into contact with infection, and their numbers consequently increase until epidemic prevalence again becomes possible. Under such conditions the action of natural selection becomes effectually hampered in producing a totally immune race.

The suggestion is that in the absence of discontinuous variations natural selection may produce periods of temporary immunity, to be followed by periods of enhanced susceptibility, but that it is powerless to produce an immunity which is absolute or permanent. In this view we arrive again at the concept of an epidemic wave.

The warning of the biologists is not intended, as Spencer[10] points out, to negative attempts at social amelioration, and Walker[6] specifically insists that consideration for the race is distinct from that for the individual. The effect of environment, of better conditions of life in general, of well-directed care and treatment, may be to preserve to maturity many whose existence is clear gain to the State. If the weakly never survived, Nelson had not won Trafalgar, and many whose resistance would normally suffice, deserve protection against adverse conditions which may turn the balance against them.

It is a clear gain to appreciate the weakness and strength of one's own side as well as the strength and weakness of the enemy, and more harm may result from despair at not realising the unattainable than from acceptance of inevitable limitations, while making a bold fight for the possible.

Already, to quote one instance, scarlet fever: in the eighties we misunderstood the message of causal organisms, and built our

faith for its extinction on isolation and disinfection; but these alone would not suffice, and the reaction caused many to speak disrespectfully of germs, as one might of the Equator. But though falling short of extinction, which may not be achieved, mitigation has resulted, and it is a clear gain to be able to record epidemics which, as in 1902–03, resulted in 115 deaths, in comparison with an epidemic in 1863–64 which resulted in 1,100 deaths in a city half the size.

Science, unlike politics, has no aim but ultimate truth. If we cannot do what we would, we must strive to do what we can; and in place of repining at our inability to stem an adverse tide, we may by joining boldness to discretion, steer many a frail craft athwart it into harbour.

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THE ARTIFICIAL PRODUCTION OF PNEUMOTHORAX IN PHTHISIS BY INJECTION OF NITROGEN.[1]

BY

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I FEEL somewhat diffident in writing on a subject of which my own experience is very slight, but thanks to the courtesy of Dr. Campbell-Faill, I am at the present moment treating a

[1] Read at a Meeting of the Bristol Medico-Chirugical Society held on May 8th, 1912.

couple of patients in conjunction with him, but we commenced our treatment so recently that it would be unfair to draw any conclusions from them as to what the end results may be. The subject has, however, been much before the medical profession of late, and I hope it may serve a useful purpose to summarise the results which others have obtained by this method of treatment.

During the past hundred years it seems to have occurred to a good number of observers that the course of pulmonary tuberculosis might be favourably influenced by mechanical means. Spasmodic attempts have been made to limit the movements of the lungs by strapping the chest, or by compressing it by weights. Of recent years, too, operations have been performed upon the bony chest wall in order to favour the collapse of tuberculous cavities. Other operations have been undertaken with the idea of draining these cavities, or of removing the whole or part of a tuberculous lung. The results of these last procedures have generally proved fatal.

Forlanini noticed that quite a number of cases are on record in which the arrest of pulmonary tuberculosis has coincided with the development of a pleural effusion, and this observation led him (in 1882) to suggest that the induction of an artificial pneumothorax might exercise a beneficial effect on the course of this disease. He himself has reported many cases successfully treated in this way, and the method is being extensively carried out on the continent and in America. In all upwards of four hundred cases have been recorded.

Several observers have practised this operation in Great Britain, but it is only since Dr. Lillingston ably summarised the treatment and its results, in an article in the *Lancet* (1911, ii., 145) last year, that any general interest has been taken in it by the medical profession of this country.

Let us consider the rationale of the proceeding. We know how important a part rest plays in the cure of tuberculosis in other parts of the body. Now it is obvious that if a satisfactory pneumothorax can be produced, the lung on that side will be absolutely immobilised. In addition to this, however,

any tuberculous cavities will be encouraged to collapse, and their contents will be expressed. Every doctor knows how essential is free drainage to the cure of an abscess in other parts of the body, and it is only reasonable to suppose that the same principle holds good in the case of the lung. A tuberculous cavity cannot be expected to close all the while it is held open by its attachment to the rigid chest wall, and is distended by purulent material which cannot drain away.

Now, what one sees when a pneumothorax is induced is as follows: During the first few hours the amount of expectoration is greatly increased as the lung empties itself of its retained secretions, and as a rule the temperature rises at this period. Afterwards the temperature falls to normal, the cough diminishes, and the patient soon experiences a distinct feeling of improvement.

One knows how exercise, excitement, or an exacerbation of the cough will send up a tuberculous patient's temperature, or produce marked fluctuations in the opsonic index. Presumably this is by causing the absorption of large doses of bacterial products from the diseased lung. By the induction of a pneumothorax we put the lung at rest and diminish the amount of blood circulating through it, and, as a natural consequence, we find a steadying of both temperature and opsonic index. This must be of great importance if we wish to treat the patient successfully by tuberculin injections. The pulse follows the temperature. In one of our cases it fell from 120 on the morning of the first injection of gas to 80 two days later.

Before describing the operation I will enumerate the principal dangers. You will thus be able to appreciate how all, or almost all, of these may be obviated by careful attention to details of technique. Briefly, then, the chief dangers are:—

(1) Pleural reflex, *i.e.* shock, or even sudden death due to tampering with the pleura. Though this disaster is fortunately extremely rare, yet it may occur, just as it may when one taps a chest for pleurisy, or washes out an empyema cavity.

(2) Gas embolism, from the injection of gas into a vein, instead of into the pleural cavity.

(3) Asphyxia.

(4) Infection, with the production of a pyopneumothorax.

Of the minor complications, faintness during the gas injection, or shortly afterwards, is not uncommon. Dyspnœa for a few hours is the rule. It causes little discomfort. Slight temporary dysphagia has been recorded. Pleural effusion occurs during the course of treatment in 30 per cent. of all cases. One need rarely interfere, but may aspirate and replace by gas if it is causing any unpleasant subjective sensations. Surgical emphysema when it occurs subsides without treatment. It may be prevented by strapping a pad over the site of puncture.

The apparatus, of which I have here a simple home-made example, consists essentially of :—

(1) A bottle containing nitrogen.

(2) A hand bellows connected with

(3) A second bottle filled with water. This water can be forced by the bellows into the first bottle, displacing an equal volume of nitrogen. Both bottles are graduated.

(4) A delivery tube which leads from the nitrogen bottle and is connected by a Y piece with a water or mercury manometer. The gas may be passed through a warming coil if desired.

(5) A needle, of which there are several forms. The commonest form in use is that designed by Saugmann.

Operation.

A preliminary injection of morphia or hyoscine lessens the tendency to pleural reflex and shock. I need scarcely mention that the patient's skin, the needle and the operator's hands must be carefully sterilised, as faulty asepsis may lead to a fatal result. The needle is pushed into an intercostal space till it is felt to penetrate the pleura. The point selected will be as far as possible from the chief seat of the disease, and more than one puncture may have to be made before a spot is found free from adhesions. In quite a large percentage of cases no such spot has been discovered, and consequently failure to produce

a pneumothorax at all has resulted. It is well to anæsthetise the skin before the initial puncture is made, as one generally uses a large needle at the first time of operating. Brauer dissects down to the pleura by open operation, so as to make certain that the point of the needle is actually introduced between its two layers. He is thus enabled to use considerable force to break down adhesions, and he records remarkably few failures. For my own part I should certainly try simple puncture first. The needle is connected with a manometer, and when one thinks the needle point is in the pleural cavity the manometer is read. If good oscillations are shown (Lillingston mentions —14 cm. of water on inspiration, to —6 cm. during expiration as an average reading) there can be no doubt that the needle has in fact entered the pleural cavity. Small negative oscillations round about —4 cm. of water indicate that the lung has been punctured. If the reading is not satisfactory one of three things has happened: (1) the needle is not between the two pleural layers, (2) these layers are adherent, or (3) the needle is blocked. Under these circumstances it is inadvisable to proceed, for the needle may have punctured a vein, and then there will be the danger of causing gas embolism. To minimise this risk I have used an ordinary trocar and canula for the first puncture. Then, removing the trocar, I introduce an inner canula which has a solid end and a lateral opening, and which projects a short distance beyond the end of the outer canula. It is practically impossible for this to get blocked, or for it to enter a vein. Once a pneumothorax has been produced a fine aspirating needle is all that is required to maintain the condition. Being certain that the needle is in position, proceed slowly to pump in gas. Nitrogen is generally used, as it is not absorbed so quickly as is air. As the gas is introduced a careful watch must be kept on the patient, and if he manifests any unfavourable symptoms a stop should at once be made. At the end of the first injection the pressure is as a rule still negative, but where there are many adhesions the injection of even a few hundred c.c. of gas may cause the pressure to become positive. The initial pressure should not be raised above 5 cm. of water,

and except in the case of a partial pneumothorax, in which it is desired to break down adhesions, at no time should it be raised above 10 cm. of water. Probably not more than 200 to 500 c.c. should be injected at the first sitting, though on subsequent occasions the amount may be raised to a litre or more, if this does not seem to be causing distress. The effects of large injections and high pressures may be alarming. Pain may be caused by the tearing down of adhesions; dyspnœa from the mediastinum being pushed over, thus hampering the action of the opposite lung; asphyxia caused by the secretions of the diseased lung being emptied into the trachea, and aspirated into the sound lung. After the initial injection the process may be repeated at intervals of a day or so, till physical signs and X-ray examinations demonstrate complete collapse of the lung. In order to accomplish this a positive pressure of 5 to 10 cm. of water should be produced. Once this has been obtained the condition may be maintained by an injection about once a month.

Let us now consider what are suitable and what unsuitable cases. In cases where there is active and advanced disease on both sides it would obviously be useless and indeed harmful to throw all the work upon one lung. Attempts have been made, it is true, to compress the two lungs alternately, but, at any rate for the present, we may regard advanced bilateral disease as the chief contradiction. Extensive disease in other organs, especially intestinal tuberculosis, would also be a bar to operation. Of the remaining cases we may consider as specially suitable:—

(1) Those in whom the disease is advanced on one side, whilst the opposite lung is *un*affected, *slightly* affected, or quiescent.

(2) Those in whom the temperature remains high in spite of the usual methods of treatment, and who show signs of auto-inoculation whenever they take any exercise. I may here instance one of our own cases, whose evening temperature for at least a year had been from 99 to 100 degrees, in spite of his having spent a long time at a sanatorium, and of the fact that

at home he had been living in a shelter. His temperature came down to normal within forty-eight hours, and has remained at that level ever since. Numerous similar instances have been recorded.

(3) Cases which are going downhill in spite of the usual methods of treatment.

(4) Early unilateral cases for whom sanatorium treatment is not available. Especially does this apply to the bread-winner of the family.

(5) Cases of severe recurrent hæmoptysis.

One is often in doubt as to which side is giving rise to the bleeding, but in these cases it would be quite justifiable to compress the worse lung, and, if this had no effect, then to aspirate the gas and repeat the operation on the other side.

(6) Although most of the recorded cases have been patients suffering from chronic tuberculosis, yet this has not been by any means invariably so, and some cases of acute phthisis have been successfully dealt with.

Laryngeal tuberculosis does not appear to be a bar to the operation. In fact, several recoveries from this form of disease have been recorded. This is easy to understand, as the cessation of cough, and of the constant passage of tuberculous sputum over the larynx must be beneficial.

The question naturally arises, "What is the duration of the treatment?" No very definite answer can yet be given. There is little doubt that in advanced cases it must be prolonged for eighteen months to two years; but in very early cases cure has been reported when the gas has been allowed to absorb completely after a few months only. If the treatment has not been sufficiently prolonged recrudescence has been the rule. Under these circumstances it has been found impossible to reproduce the pneumothorax owing to the formation of dense adhesions between the two pleural layers. Therefore when it has been decided to allow the lung to re-expand a careful watch should be kept on the patient. A rise of temperature or any increase in the amount of expectoration would suggest the advisability of keeping the lung at rest for a few months longer.

It is wonderful how readily the healthy portions of the lung will expand and fill the thoracic cavity, even after the treatment has lasted from two to three years.

In discussing the results of treatment we must bear in mind that all, or almost all, the reported cases have been of one type, viz. patients suffering from very advanced disease, in whom other methods had proved incapable of arresting the morbid process, and in whom the mortality would most likely have been at least 90 per cent. Many cases have been too recently published for us to be able to judge what their ultimate fate may be, but undoubtedly the initial results have been full of promise. Certainly well over one hundred cases have, however, been recorded in whom the treatment was commenced many years ago, and in these there would seem to have been a permanent arrest of the disease in at least 60 per cent. In many of the more recent cases immense improvement has already ensued, and patients who a few months back seemed almost moribund now appear to be on the high road to recovery. Where deaths have been recorded during the course of the treatment they have been due, as a rule, to disease in the other lung, to tuberculous disease in some other part of the body, or to some intercurrent malady. In the few cases, in which *post-mortem* examinations have been made, healing by fibrosis has generally been recorded, though this has not always been evident.

One theoretical objection has been raised to the treatment, viz. that when a *spontaneous* pneumothorax occurs in a late case of phthisis a fatal result is frequent, but I hope that I have shown this to be quite a specious argument in that the two conditions are in no way comparable. In a spontaneous case there is no regulation of the pressure, and no stopping when symptoms of shock arise. Moreover, the pleural cavity is in direct communication with the lung, and is very liable to become infected from this diseased organ.

I hope I have shown that this method of treatment has a future before it, even though it be for only a limited number from out the vast array of the tuberculous. There is plenty of room for experiment and observation, and I trust that many

will give this treatment a trial upon certain selected cases. Risk there may be, but who counts risk when life and death are in the balance ?

Dr. D. KENNEDY (introduced) said: "I do not think Dr. Chitty sufficiently emphasised the dangers and difficulties met with in attempting to produce an artificial pneumothorax. The experience of surgeons who have done a large number of cases is that in about one-third of them it is impossible to perform the operation, owing to adhesions between the two layers of the pleura. This complication occurred in the first case we attempted at Nordrach, in which twelve punctures in all were made on three separate days. One must also be able to recognise when the point of the needle is in a vein, or if it has gone through the pleura into the lung; in the latter case the oscillations of the manometer (water) are usually about from -2 and $+2$ cm. If in doubt as to whether the needle is in the lung or not, a few drops of peppermint or eau-de-Cologne added to the jar containing the nitrogen will soon settle matters, as on injecting a small quantity of gas the peppermint or eau-de-Cologne, as the case may be, will be evident from the patient's breath. No harm appears to have resulted from injecting gas into the lung.

"Our first case was, as I mentioned before, unsuccessful, and the second was a very difficult one, the patient having a large cavity in the upper lobe, and although only a very limited pneumothorax could be produced, still the expectoration diminished to about one-fifth almost at once, the cough became much less, and the temperature fell several points. The pressure after each injection in this case was very high, $+17\frac{1}{2}$ and 19 cm. The patient only experienced very slight dyspnœa, but had a difficulty in swallowing solid food for a few days after each injection. Diffuse surgical emphysema occurred after the second injection, but this was subsequently prevented by strapping a piece of gauze tightly over the puncture.

"The third case, which we did a few days ago, has been perfectly straightforward from the first. This patient also had

a large cavity in the upper lobe, and had had a couple of very severe hemorrhages just previously. The manometer showed a pressure of $-3\frac{1}{2}$ and -5 cm. After injecting 300 cc. of nitrogen, pressure was $-\frac{1}{2}$ and -3 cm. The temperature in this case did not fall until the lung was practically completely collapsed; this is, I believe, in accordance with the experience of other observers.

"The needles we use are Saugmann's, which have the opening at the point, and Lillingston's modification which have the opening at the side near the point—they are about the size of a knitting needle. A stilette has frequently to be used, as the lumen gets blocked in passing through the tissues."

(See also p. 189, a communication from Dr. Mariette).

NOTES ON AN UNUSUAL CASE OF HODGKIN'S DISEASE.[1]

BY

E. LEONARD LEES, M.D., and F. H. EDGEWORTH, M.D., D.Sc.

THE following case of Hodgkin's disease is perhaps worthy of being brought before your notice, as it showed the exceptional features of lymphoid growths in orbits, eyelids, temporal regions, and left mamma.

A man, aged 52, who had lived in Johannesburg for the previous twenty-three years, and who had not suffered from any illness, came under our care in April of last year. He had noticed four months before a swelling in the right side of the neck, and then swellings in successively the right axilla, left side of neck, left axilla, left groin, and right groin; also that the throat had swollen. Some loss of weight and failure of strength and energy had accompanied the development of these swellings.

On examination, it was found that the lymphatic glands in the above-mentioned regions were enlarged, discrete, painless,

[1] Read at a Meeting of the Bath and Bristol Branch of the British Medical Association on March 27th, 1912.

firm, and not adherent to the overlying skin. There were no symptoms or physical signs of enlargement of lymphatic glands in the chest and abdomen, nor any evidence of enlargement of the thymus gland. The liver was not enlarged; the lower pole of the spleen extended some two inches below the left costal margin. The tonsils and lymphatic nodules in the wall of the pharynx were enlarged, so that nasal breathing was difficult and the mouth consequently dry. Each temporal region was prominent, as if due to something bulging the temporal muscle outwards. Exophthalmos was doubtful; both eyelids were swollen, due to a deposit of firm tissue between the tarsal cartilages and the skin.

Examination of the blood gave the following results:— Number of red corpuscles 6,300,000, white corpuscles 2,000, per c.m. A differential count showed polymorphonuclears 52 per cent., large lymphocytes 7 per cent., small lymphocytes 27 per cent., eosinophils 14 per cent.

The administration of arsenic was immediately begun and persisted in. The dose given was liquor arsenicalis ♏ vii *ter die p.c.* Under this treatment the patient steadily improved, and by the end of July appeared almost well. The swellings in the eyelids and temporal regions were barely noticeable, the tonsils were of normal size, the lymphatic glands were palpable but of normal size. The spleen could not be felt until the patient was asked to take a deep breath, when it was found to descend so that it could be grasped and its upper edge felt.

The patient, who continued to take arsenic in smaller doses, remained well during the month of August and the first half of September, and then suddenly relapsed, so that by the end of the first week in October his condition was very like that present in the previous April. The following differences existed. The spleen was larger, extending down below the level of the umbilicus, and in addition to the swelling of the temporal regions and eyelids exophthalmos was now certainly present. The lymphatic glands and tonsils were as large as formerly. Examination of the blood showed 4,308,000 red corpuscles and 1,560 white corpuscles per c.m., hæmoglobin 70 per cent., colour index .81. A differential count of the white corpuscles gave polymorphonuclears 53 per cent., large lymphocytes 16 per cent., small lymphocytes 20 per cent., eosinophils 11 per cent.

From this time onwards the patient progressively grew worse. The liver began to enlarge, so that a month later it extended 2 in. below the right costal margin, and the spleen grew still larger. Fever, hitherto absent, came on, the temperature rising to 101° every afternoon from a normal one in the morning. The only further change, other than a steadily

increasing weakness and rapidity of the pulse, was an enlargement of the left mammary gland, which eventually measured 1½ in. in diameter and ¾ in. in thickness. The right mammary gland did not enlarge. The patient died at the end of November, after an illness of eleven months' duration.

Permission to make a complete *post-mortem* examination was withheld, but we were permitted to excise a lymphatic gland from the left axilla. This gland was as large as a pigeon's egg with a slightly thickened capsule, and on section showed a slightly convex almost translucent appearance, with no caseation. Microscopical examination disclosed the existence of a delicate reticulum of varying mesh, enclosing lymphocytes, polymorphs, eosinophils, and uni- and multi-nuclear giant cells. No areas of necrosis were seen.

On reviewing the details of this case, it is clear that its features were similar to those usually seen and described in Hodgkin's disease—the characteristic enlargement of the lymphatic glands, beginning in one side of the neck and spreading from group to group, the enlargement of the spleen, the immense improvement under the influence of arsenic, the febrile relapse uninfluenced by this drug, the macroscopic and microscopic appearances of a lymphatic gland.

The condition of the blood was a little exceptional, in that a polycythemia was present in the early stages; later on the number of red corpuscles diminished somewhat, and an anæmia of secondary type developed. The number of leucocytes in Hodgkin's disease varies within rather wide limits, but diminution to the number found in this case is exceptional. A relative increase in the number of eosinophils is common, though not invariable; for instance, Pepper found an eosinophilia of from 8.8 to 14 per cent. in four out of twenty cases.

The extraordinary mobility of the spleen on resumption of its normal size in the month of July was probably due to a previous stretching of the phreno-splenic and posterior splenic ligaments.

The greatest interest, however, attaches to the presence of adenoid growths in the eyelids, orbits, temporal regions, and left mamma.

Exophthalmos and swelling of the eyelids have generally

but not invariably occurred together, and then on both sides. They may also develop in diseases other than Hodgkin's. Parsons, in his *Pathology of the Eye*, groups such cases into lymphoma, leukæmia, pseudo-leukæmia, and doubtful. The associated features in the above recorded case definitely mark it out as one of lymphadenoma.

Swelling of the temporal regions and of the mammary gland must be still more exceptional in cases of lymphadenoma. We have not been able to find any record of their occurrence.

A CASE OF THE HEROIN HABIT.[1]

BY

J. ODERY SYMES, M.D.,

Physician to the Bristol General Hospital.

HEROIN, or diacetyl morphia, is chiefly used in this country as a sedative in cases of troublesome cough, and is generally given as the hydrochloride in a mixture. I am informed, however, by Messrs. Burroughs and Wellcome, that it is largely used at the present time hypodermically, chiefly, I imagine, for the relief of pain or the control of asthma. It is desirable, therefore, that medical men should know that there is a grave risk of a patient using this drug contracting a heroin habit similar to the morphia habit. Several French writers[1] have drawn attention to this point, and from their experience with cases of heroin mania they are convinced that the effects of this drug are more profound than those of morphia, and that the suppression of the habit is more difficult, more dangerous, and more painful.

[1] Duhem, *Progrès méd.*, 1907, xxiii. 113; *Tribune méd.*, July 1st, 1905.

Duhem, who reports upon seventeen cases of heroin mania, says that in the process of cure the chief danger is that of

[1] Read at a Meeting of the Bath and Bristol Branch of the British Medical Association, March 25th, 1912.

respiratory failure, which comes on without any preliminary failure of the heart. Respiratory failure is particularly apt to occur in cases in which the drug is withdrawn too rapidly. Amongst other symptoms during the period of cure he notes hallucinations and delirium, periods of emotional excitement, sleeplessness, headache, generalised pain, and the very slow return to normal health and weight. The dose of heroin in the cases reported varied from 1 to 5 grains a day.

A case has recently come under my care in which the patient was supplied by a medical man with a hypodermic syringe and a supply of heroin hydrochloride tabloids to be used for the relief of pain, and was assured there was no danger of contracting a habit from its continued use. The patient, a lady of 39 years of age, whilst staying at a well-known spa, was seized with neuritis in the right arm. As other remedies failed to give relief, the doctor gave a hypodermic injection of $\frac{1}{12}$ grain of heroin hydrochloride, and directed that the nurse should repeat the dose whenever the pain recurred. The first effect of the injection was to relieve the pain, but half an hour later vomiting commenced and continued during the night. This was late in 1906. As the pain continued, the injections were repeated, first by the doctor, then by the nurse, and later by a relative, and the dose was gradually increased to $\frac{1}{4}$ grain three or four times a day. During the next two years the patient made ineffectual attempts to break off the habit. In 1907 she learned to use the hypodermic syringe herself. From this time the habit gradually became more confirmed, and the dose increased, until at the time of her breakdown, in October, 1911, she was taking between 4 and 5 grains in the twenty-four hours. The daily allowance never exceeded 5 grains.

With regard to the effects of the drug, I cannot do better than describe some of these in the patient's own words, for she is an observant woman of education and refinement. Even after the first dose there was " a feeling of excessive fidgetiness, which seemed to creep right up from the very lowest part of the body (the womb), making me so terribly restless that I could not keep my legs still for a moment. This particular feeling

increased maddeningly until I had the injection again, when I felt immediately relieved and blissfully comfortable for about 2½ to 3 hours." It was the recurrence of these feelings which led to the repetition of the drug throughout. Gradually the patient's health began to fail; she became thinner, less able to take physical exertion, depressed and seedy. The appetite was very poor, and she noticed a peculiar salt taste in the mouth when the drug was withheld; occasionally she had attacks of vomiting, and constipation was most troublesome. The catamenia became at first irregular and scanty, and finally ceased. She had never been a good sleeper, but since taking heroin this had become much worse, and she had recourse to drugs (chiefly veronal) to induce sleep. If the interval between the injections of heroin was too long she "felt wretchedly fidgety and uncomfortable, and people and things seemed to go farther from me as I looked at them, and at times I felt almost light-headed." If the dose was increased too rapidly it gave rise to palpitation and excitement. Amongst other symptoms noticed were increased sensibility to sounds and loss of recuperative power after small injuries, such as cuts; another most troublesome symptom was difficulty in starting micturition. There were never any symptoms of respiratory failure, oppression of breathing, etc. The patient says that whilst taking the drug (although previously extremely subject to colds) she never sneezed or coughed, nor did she ever catch a cold during the whole five years.

The relief given by the injections was instantaneous, but these had to be repeated at shorter and shorter intervals. The patient describes herself as having felt "bucked up," both physically and mentally, keener sensed, calmer, happier in mind, and more ready and able to undertake the exertion entailed by golf, bicycling, roller skating, or walking immediately after taking the drug. There was no marked mental or moral failure. Finally, in October, 1911, when taking about 5 grains of heroin a day, she was seized with a violent attack of vomiting and prostration with alternately shivering and perspiring. She was unable to move from her bed, and the habit

being discovered, an attempt was made to break it off by gradually tapering the dose. Six weeks from the commencement of treatment the dose had been reduced from 5 grains to $\frac{4}{60}$ths of a grain a day. The chief difficulties had been sleeplessness, restlessness, emotional outbreaks, tachycardia, loss of appetite and prostration. The patient was at the time walking out of doors, and the mental condition was normal. Any attempt to reduce the heroin beyond $\frac{4}{60}$ths of a grain, although unknown to the patient, gave rise to great discomfort and increased emotional excitement. I therefore substituted $\frac{1}{8}$th grain of morphia twice a day, and decreased this amount daily. With the substitution of morphia the restlessness disappeared, and by the end of the eighth week hypodermic injections of sterile water only were employed. During the last week of the cure she suffered from a severe cold, the first for five years.

At the present time, six months from the commencement of the cure, the patient is in splendid health, and professes to have no craving for the drug. Sleeplessness, which has been a troublesome symptom throughout the cure, is relieved by the use of adalin, and this drug is still occasionally used.

NOTES ON "SOME DREAMS AND THEIR SIGNIFICANCE."[1]

BY

SIR GEORGE H. SAVAGE, M.D., F.R.C.P.

I HAVE promised to read a paper at this your local meeting, and I will keep my promise, though I feel more practical gain would follow investigation of the actual treatment of mental disorders at Brislington House. The subject I selected was "Some Dreams and their Significance." Many of you know

[1] Read at the Meeting of the Local Branch of the Medico-Psychological Association, held at Brislington House, April 18th, 1912.

already that I am a very experienced student of dreams. I hardly ever close my eyes without dreaming, and it has therefore been a subject of interest with me to trace the nature of dreams in the sane and in the insane, to see if they can assist us in our diagnosis or treatment.

First, I must give some sort of definition of a dream. I prefer this one: "Mental activities which occurring during sleep are more or less recalled on awaking." Everyone tells you that the lower animals dream, and refer at once to their dog, who moves his feet as if pursuing when asleep on the hearth-rug. That mental action is going on during sleep one admits, but we cannot tell if the dog has any memory of this on waking. I take it that we all believe that mental action of some sort is as constant as heart's action, and continues until death. Most of us must have seen evidences of this in automatic acts performed near the point of death, but a dream rises to a point of consciousness.

To proceed with the subject, dreams may assist in diagnosis of mental disorder. Since the classical description of the epileptic old lady, who always saw someone approaching her to knock her down with a crutch before a fit, we all recognise that dream aura may precede a fit. I have met with cases in which there was always the same dream, and this dream may be followed by automatic action with complete mental oblivion. Such cases provide some of the persons who are picked up wandering in the streets, and though rare, yet it is established I believe that criminal acts depending on a dream may follow during the automatic stage. I have met with certain insane persons who have had definite hallucinations following dream impressions. I fancy many of us know the hypnotic hallucinations which arise on awakening and the persistence of a kind of mental after-image. I have frequently talked to persons who have been recovering from delirium, and they have asked whether such and such a thing has taken place, only to learn that the idea was a mistake. One I remember well, a medical friend who was much puzzled at the confusion which arose in his mind from the recalling of dream memories and

others which were of events which really occurred, as he was passing from a delirious to a normal state. I am convinced that some cases about which I have been consulted, in which there have been accusations of indecent assault or even rape, depended upon erotic dreams occurring in adolescents. Dreams occurring in adolescence or at critical periods may lead to various delusions. I have traced a number of sexual delusions and ideas of moral fault to dreams which have been unusually vivid in middle-aged women. The origin and development may be in this way. A woman, often a widow or middle-aged spinster, has one or more very distressing dreams with sense of full sexual gratification. This has given rise in some to the feeling that the ideas are evil, and that they are in the hands of the Devil. In one very distressing case a lady of high birth and of very narrow religious views, after such a dream, was persuaded that the Devil, in whom she fully believed, had during the night visited her, and that she was pregnant of a devil. It is hardly necessary to do more than to point out how such dreams may affect an unstable mind.

I have seen several elderly men who had arterial degeneration who had very disturbing dreams with persistent hypnotic hallucinations. Thus in one case the patient would wake with a dream that persons were in his room making use of his toilet things, and he would have the vision so clearly before his eyes on waking that he would jump up to drive them away. These and similar dream started fancies passed into true visual and lasting hallucinations.

I now pass to the dreams which have been of the same type, but which have preceded attacks of insanity not allied to epilepsy. One lady, whose case I have described elsewhere, had after a good deal of domestic strain a vivid dream that she saw her brother with his throat cut, and that she felt in some way she had been the cause of this. This dream was followed almost immediately by an attack of profound melancholia, in which the dominant idea was that she had caused endless trouble and disgrace to her family. She recovered, and some years later had a similar dream, followed by a like attack of

melancholia, with the old delusions. A third dream, followed by a third mental breakdown, followed; but the last attack was slight, as the patient had learnt her lesson, and after the dream at once placed herself under treatment. I may say that this lady, having passed middle life, has now for many years been perfectly stable. I have seen several instances in which an attack of mania has followed a dream of horror or terror.

Next, as to the dreams of the insane. Many insane patients never complain of dreams; many, in a state of exaltation, are not trustworthy. I have heard marvellous tales which I have not been able to accept, but from what I have been able to gather the maniacal patient's dreams are of the confused and delirious type, not much more incoherent than those of the ordinary dreamer; but I have met several instances in which men who have had previous attacks of mania have been warned by certain dreams that an illness was impending. These are like some of the so-called prophetic dreams, in which persons have dreamt that they had some lung trouble, and pneumonia has developed in a few days. In melancholic patients the dreams are miserable, and are but part of the morbid feeling, but when they begin to improve the dream-life is more happy. In fact, I never fail to ask about the dreams of the melancholics, for I always expect to hear of peace and happiness coming first during sleep. I think I may say that I never knew a melancholic patient who had begun to dream happily who did not recover. Such persons often say they wish they did not wake at all, as they are so happy in their dreams. The same thing may occur in mania, but this is more difficult to gauge. I have known a maniacal patient who has become quiet, and when spoken to has said he dreamt of home and felt more contented.

And now to sum up. Dreams are thought by some to be reversions to primitive thought; insanity has been said to be a waking dream, and dream a sleeping insanity. Hughlings Jackson said, "Find out all about dreams, and you will know all about insanity." These general aphorisms I leave with you for your future digestion.

Reviews of Books.

A Manual of Midwifery. By BALFOUR MARSHALL, M.D., C.M. Pp. xviii, 401. Glasgow: James Maclehose & Sons. 1912.

This book is bound to become a popular one with students. It is written in a very easy, clear style, and at the same time it is methodical in its arrangement. All through the practical points are to the fore and theories are in the background. The systematic method of taking first the physiological or normal conditions, and then the pathological variations in the same subject, and describing what to expect in all cases on the one hand and what to be on the look-out for when difficulties arise on the other, is adopted. The actual ground covered in a book like this, taken from a course of lectures, is of course much the same as in most works of the kind; but the presentation of the same so as to make the subject easily grasped and retained is met with in but few, and in this book it is especially noticeable.

From the practitioner's point of view the work is particularly good in calling attention to just those little things which are useful to him by being a comfort to his patient.

The book is considerably lightened by the avoidance of long descriptions of uncommon complications, which the author recommends the reader to look up in larger text-books.

Anæsthesia and Analgesia. By J. D. MORTIMER, M.B. Lond., F.R.C.S. Eng. Pp. x, 276. London: University of London Press. 1911.

In this volume of London Practitioners' Manuals DR. Mortimer has refrained from dealing with the historical or chemical aspects of his subject, and has successfully set himself the task of laying before his readers such details and rules of administration as may be of special value for the guidance of the anæsthetist in his ordinary practice. A work of this description does not readily lend itself to originality, and as a matter of fact, we fail to find in these pages much information which has not appeared under other authors.

In many instances the treatment of the subject suffers by being too highly condensed. For instance, in the section dealing with the administration of ether by the open method, no mention is made of any form of covering for the wire mask other than one composed of from eight to twelve layers of gauze. As this

fabric is apt to give a quite unnecessary concentration of ether vapour, its promiscuous use is prone to lead to undesirable after-effects.

Chapter xii is devoted to spinal analgesia, and contains a clear "summary of conclusions," which terminate with the following warning: "That this (spinal) method should not be adopted without some definite reason." It seems a pity that the author did not here insert a table showing exactly in what particular conditions he considers general anæsthesia to be inadmissible, or to be fraught with graver risks than is spinal analgesia. Such a list would be extremely useful.

Minor Surgery. By LEONARD A. BIDWELL, F.R.C.S. Pp. xiv, 265. London: University of London Press. 1911.

This is a useful book, containing a clear and succinct account of minor surgery, and of the application of it to modern methods.

The Growth of Bone. By WILLIAM MACEWEN, F.R.S. Pp. 210. Glasgow: James Maclehose and Sons. 1912.

This little book is one of extraordinary interest. In fact, it may be described as almost sensational in its iconoclastic novelty. Its distinguished author proves by a series of simple experiments that the commonly accepted teaching about the growth and vitality of bone depending upon the periosteum is quite fallacious.

It is shown how when a sub-periosteal resection of bone is made, no new bone is formed from the intact periosteum; that periosteal flaps, however they are formed, will not produce bone; that new bone is rapidly formed from the cut ends of the shafts of long bones from which a piece has been removed; that total removal of the periosteum from bone does not impair its vitality; and that pieces of bone cut up into small fragments and transplanted can and do grow into firm, bony masses.

The periosteum is nothing more than a limiting membrane, and the living osteoblasts in the bone itself are the dominating vital factors in bone growth.

The regeneration of the shaft of a necrosed bone as a sub-periosteal tube is regarded merely as being the result of the increased activity of osteoblasts driven out from the inflamed bone into the loose connective tissue between the periosteum and the shaft.

All the experiments are beautifully illustrated, and the most sceptical reader cannot fail to be convinced by the simple demonstrations they afford. It would be difficult to exaggerate the practical importance of this work.

Some New and Interesting Points in Ships' Hygiene. By W. MELVILLE-DAVISON, M.B., B.S. Pp. 87. Bristol: John Wright & Sons Ltd. 1911.

This is a practical little book which gives the author's experience in regard to many points of hygiene of interest and importance on board ship. Mosquitoes, rats and other vermin, filters, disinfection, all receive consideration. Those who go down to the sea in ships should consult the volume.

A Manual of Surgical Treatment. By Sir W. WATSON CHEYNE, Bart., C.B., and F. F. BURGHARD, M.S. New Edition, entirely revised and largely re-written with the assistance of T. P. LEGG, M.S., F.R.C.S., and ARTHUR EDMUNDS, M.S., F.R.C.S. In five vols. Vol. I, pp. xxii, 552; vol. II, pp. xxviii, 570. London: Longmans, Green & Co. 1912.

This work has already received such a well-merited and world-wide recognition that we gladly welcome the new and revised edition, in which the assistance of Legg and Edmunds has been received by the original authors.

The volume deals with general surgical diseases, wounds and their complications, infective diseases, tumours and deformities. It also contains an appendix by Dr. Silk on the administration of anæsthetics, and one by Dr. Emery on the examination of the blood.

The great value of the manual consists in the fact that it records the personal experiences and convictions of two of the most eminent of English surgeons. The details of treatment are described with a clearness and precision which leaves nothing to be desired. It is, however, a matter of regret that in a new edition so much that is old-fashioned should still find a prominent place. This is particularly the case in the present volume dealing with general principles of asepsis and antisepsis. As examples, the following may be mentioned. The iodine method of catgut preparation is omitted; the skin is to be prepared for operations by the long and tedious chemical processes, and the iodine method, in spite of the great amount of work that has proved its excellence is dismissed as having no advantages over the old method with its six-fold change of solutions. The surgeon is depicted as prepared for operations with a short-sleeved gown, the hairy arms being exposed for contact with instruments or ligatures. The marine sponge is greatly extolled over the simple swab. Clean wounds are to be bathed with strong chemical solutions during the process of

dressing. In the treatment of talipes the value of direct attack upon the bones, *e.g.* the astragalus, is considered as only suitable for the most advanced and intractable cases.

The book will, however, in spite of these drawbacks, maintain its high position for purposes of reference.

Vol. II deals with the surgical affections of the different tissues considered separately—first of the soft tissues, then of the bones, and concludes with a systematic account of various amputations. In almost every chapter new matter and new illustrations have been added, which bring the treatise well up to date. Some of the newer sections, which are specially good, are the following:—Treatment of injured nerves and different varieties of nerve suture, the indications for and technique of the excision of the posterior nerve roots, the suture of arteries, and the details of Matas' operations for aneurysms; and an excellent discussion of the various methods of treating fractures and their complications, the more recent operative measures being described.

In the other parts the original standard of excellence has been maintained or improved upon in such a way as to fully retain the position of this work as the standard one for the purposes of reference.

Joint Tuberculosis. By LEONARD W. ELY, M.D. Pp. xi, 243. Bristol: John Wright and Sons Ltd. 1911.

It is doubtful whether this book would have been written if a new edition of Sir Watson Cheyne's work on *Tuberculous Diseases of Bones and Joints* had appeared a little earlier, for the author, in his Preface, refers to this work as published some years ago, and he therefore considered there was some need for another book on the same subjects. But the second edition of Sir Watson Cheyne's book appeared a few months after Dr. Ely's was published. However, Dr. Ely's work is a valuable one, and gives us, in addition to his own observations, the views and practice of American surgeons, and those of other nationalities at the present time. He has studied the pathology of joint tuberculosis very thoroughly, and has observed much of its clinical aspect also. He first considers the pathology of joint tuberculosis in general, and also its symptoms, diagnosis and treatment, and then devotes chapters to the consideration of tuberculous disease of the spine and the various joints. The portion of the work devoted to the pathology of the disease seems to be the best illustrated, but there are reproductions of numerous skiagrams in the other part, though we think some more illustrations here would be an advantage.

The author explains why he has not more fully described

operative technique. He says it is better described in works on general surgery. We hardly think so, and consider that in a work on joint tuberculosis all operative procedures recommended by the author, at any rate, should be fully described.

We notice that the surgical appointments held by the author are chiefly orthopædic. In America diseases of bones and joints are included under orthopædic surgery. This seems very remarkable to English surgeons, and we fail to see why orthopædic surgery, which is really the surgery of deformation, should include bones and joints. The argument seems to be that it should include them as they are organs of locomotion. As well might it include tendons and peripheral nerves. But orthopædic surgery does not deal with deformities of the organs of locomotion only; for instance, wry neck is a subject which would quite naturally come under such a division of surgery.

We cannot regard the account of tuberculous disease in the various joints as by any means complete. If we take the account of one of the most common forms of the disease—disease of the hip joint—we find several very important omissions. We do not expect the author to bring forward evidence which will convince his readers as to the common starting-point of the disease, for we know the great difficulty in procuring such evidence, but with regard to abscess formation we expect more than the somewhat vague statement that "abscess appears on the front of the thigh." We think it very doubtful that pus escapes from the joint by yielding of the capsule "anteriorly and below," as stated by the author. The method of formation of a "wandering acetabulum" is very imperfectly described, and its relation to true dislocation not clearly defined. Then when we turn to the "symptomatology" and diagnosis we fail to find any reference to the distinction, which those inexperienced so often fail to make, between absolute fixation from muscle spasm and true ankylosis. We are surprised also not to hear of the method which has been called by American surgeons "crowding the joint surfaces together" as a means of diagnosis. The author says it is unwise to attempt to elicit pain by striking the sole of the foot, "as it inflicts trauma," and therefore he has probably purposely omitted reference to crowding the joint surfaces together; but we think such a method may be a very valuable means of diagnosis in intra-osseous lesions, and cannot do any real harm. As well might we abstain from trying for movement in the joint for fear of "inflicting trauma."

We must say we are very dissatisfied with the author's recommendations as to the treatment of tuberculous hip joint disease. We do not like to hear of reduction of early deformity under an anæsthetic without, at any rate, a full trial of weight extension. Weight extension alone is quite sufficient in

most cases, and under an anæsthetic the surgeon is very likely to employ more force than he should in dealing with a tuberculous joint. Of course, if there are not beds enough in the hospitals of the town in which Dr. Ely practices, there may be some excuse for the method he recommends. Most British surgeons have considered that it is not only important to apply a splint to a tuberculous hip so that it cannot be moved, but also to prevent weight bearing through the joint. Thomas's hip splint, used with a paten on the boot of the other foot, and crutches, does this. We are therefore much surprised to find the recommendation to treat these cases with a plaster spica, and let them get about freely on the affected limb, and to be told that this is the routine treatment in many hospitals in America at the present time. But the author says that weight bearing is not to be allowed in those cases in which a skiagram shows marked acetabular involvement, on account of the thinness of the bone at the acetabulum. We should feel quite unable to say that extensive disease did not exist because we did not see evidence of it in the skiagram. We suppose the author is afraid, if such disease exists, as he says the bone is thin, that if weight is borne on the limb the head will be forced through into the pelvis. But the bone forming the wall of the acetabulum is not thin. Whether there is much disease or little, either in the head or the acetabulum, we believe the removal of intra-osseous pressure by removing weight bearing from the limb is a very important element in the treatment of the case, and we therefore in this country prevent weight transmission through the limb. Another form of apparatus recommended by the author seems to us equally deficient in essential requirements. This is what he calls a " brace," and he describes and figures it. This apparatus prevents weight bearing, but it does not prevent movement at the joint, which should be the first object of our treatment. This imperfect apparatus is also supposed to make extension on the limb while the child is getting about. The apparatus seems to have been invented by those who held the erroneous view that fixation of a tuberculous joint caused ankylosis. Even the author admits how unsatisfactory it is as a means of making extension.

The author is not one of those surgeons who believe in excision as a valuable method of treatment even in suppurating cases. Indeed, he is opposed even to freely opening and scraping out the abscess, and says that all we must do is either to aspirate, inject, or possibly make small incisions, and cup after the manner of Klapp. He says all other operative treatment in children consists exclusively in amputation. We think if he practised a free opening and scraping out of abscesses, or if this failed, an excision, and maintained an aseptic wound, he would rarely have to amputate, which must always

be looked on as an example of failure in treatment. He says "resection of the joint, done as a rule only in advanced cases, has a mortality of about 50 per cent." If he means that this fearful mortality occurs when done in advanced cases, it is even then a gross exaggeration; but if he means that this is the percentage of deaths of an operation which is usually performed in advanced cases, which seems the obvious meaning, that is even a greater exaggeration still. The mortality of the operation in cases of unopened abscess is very small, and even in cases with septic sinuses is by no means great.

The operative treatment of tuberculous disease of the hip in adults, recommended by the author, seems to us even more unsatisfactory than that suggested by him for children. His great aim, he tells us, is to deprive the joint of function, and avoid secondary infection. One would imagine from this that he aimed at ankylosis of the joint, and that the surgeon had to prevent secondary infection from auto-inoculation. What he does mean is that he advises excision of the head of the bone, and expects displacement of the cut section of the neck on to the dorsum ilei to give the joint rest, but in the end movement remains. He takes no trouble to remove as much tuberculous tissue from the joint as possible. He only says, "If one wishes, one may scrape the acetabulum." Most surgeons wisely do wish to scrape the acetabulum, and remove any sequestra found in it, and to cut or scrape away as much of the disease of the soft tissues of the joint as they can, as well as excise the diseased head of the femur. In tuberculous disease we wisely remove all the diseased tissue we can possibly get away, and generally nature is able to deal with the rest. It would be very unwise not to be as thorough as we can in removal of the tuberculous tissue from the joint because we cannot remove it completely. The author advises us to put up the limb after the operation in extension and slight abduction, and he says "this position crowds the stump of the neck of the femur against the pelvis." Now if it does so it must be against the diseased acetabulum, which the author has perhaps not even scraped, and thus he prevents that dislocation of the stump of the neck which he says it is his aim to produce. If he really wanted to produce dislocation at once, and placed his whole faith as to the efficiency of the operation in obtaining it, let him put up the limb not in abduction, but in adduction. But there is no need to crowd the stump of the neck against the innominate bone at all, and it will eventually get drawn up towards the dorsum; but the essential thing in the operation is the removal of the diseased tissue from the joint.

In describing the condition found on opening the joint when excision is performed, the author says the head of the femur may be found eroded. This is generally so. Then he also makes

the remarkable statement that the head, denuded of its cartilage, may be found "adherent" to the acetabulum. Now this must be either fibrous or bony ankylosis, a condition which does not call for excision of the joint at all. We should very much regret cutting into a joint for purposes of excision, and finding that it had advanced so far towards recovery that such "adhesion" had occurred, unless after all active disease as well as deformity has to be considered. Of course, bony ankylosis with deformity may require operation, but this is a very different matter from operation in the active stage of the disease. We notice that for bony ankylosis the author says osteotomy of the neck of the femur may be performed; but there is very often no neck left when ankylosis occurs, as the part which was the neck may be united to the innominate bone, after complete destruction of head by caries. If we have to do an osteotomy for bony ankylosis following tuberculous hip-disease, the bone should be divided, or a wedge removed from the shaft, just below the level of the trochanter.

Diseases of the Ear. By W. MILLIGAN, M.D., and WYATT WINGRAVE, M.D. Pp. xxvii, 596. London: Macmillan and Co. Limited. 1911.

Chapters I to III, on the development, anatomy of the external ear, and physiology of the sound-conducting apparatus, occupy the first seventeen pages. The anatomy of the internal ear is separately described in Chapter XXXII, but the forty-three pages on the examination of the ear, etc., is throughout excellent, and the various tests are clearly described, and their value contrasted. Separate chapters are devoted to deformities of the external ear, injuries, diseases of the auricle, foreign bodies, diseases of the external auditory meatus, of the middle ear, the membranal inflammations, traumatic lesions, exudative catarrh, chronic adhesive catarrh, acute suppurative inflammation of the middle ear, epitympanic suppuration, chronic suppurative inflammation of the middle ear, and so forth, and all are discussed thoroughly. In labyrinthine affections Dr. Milligan, as one of the pioneers in the modern developments of operative treatment of these regions, might be expected to reach a high standard of excellence, and in this we are not disappointed.

As a scientific and practical guide to modern otology this text-book is unsurpassed. Every section is treated with a masterly clearness and authority, and nothing of importance is omitted. Dr. Milligan has been ably supported by the pathological contributions and illustrations of Dr. Wyatt

Wingrave, who has done so much to advance our knowledge of the pathology of the ear, nose and throat. Richly illustrated in colour and in black and white, well written, authoritative, concise and complete, the work is a credit to British otology.

Tuberculin Treatment. By CLIVE RIVIERE, M.D., F.R.C.P., and EGBERT MORLAND, M.D., B.Sc. Pp. xv, 277. London: Oxford Medical Publications. 1912.

The authors and the profession are alike to be congratulated on the publication of this book, which comes at a time when there is a well-marked, if belated, increase in the interest taken in the use of tuberculin in this country, and should do more than any work that has yet appeared to make clear the present position of tuberculin treatment and to act as a practical guide to the increasing number of those who wish to make use of it.

In striking contrast to so much that has been written on the subject, Drs. Riviere and Morland, though obviously enthusiasts, present their views in an extremely well-reasoned and well-balanced manner.

Whether the reader is or is not in accord with some of the theoretical parts of the book matters not, the point being that there is here placed within the reach of all who wish to use tuberculin a text-book, written in the simplest and most lucid manner, which will enable them with a little care and practice to select the right case and the right tuberculin and to regulate the dosage on fixed principles.

The book is divided into three portions, with a table of contents at the beginning of each. The first part deals with the general lines of tuberculin administration, and in it special attention is called to the essential unity of all tuberculins, and it is pointed out that this fact simplifies a good deal that has hitherto appeared obscure. At the same time, the two main varieties of tuberculins are indicated, namely those which contain endoplasm and those which are extracts only. The important clinical use which may be made of their difference in solubility is pointed out. The section on the relation between sensitiveness and tolerance, with diagrams, is particularly good. Under the heading " Standard of Dosage " the authors advocate the adoption of the cubic millimetre, and it is impossible to read their views without agreeing with them that " it is remarkable that it has not yet been widely adopted."

The table of equivalent doses under various systems of measurement is excellent. Very good and simple methods of preparing dilutions are given, the drop method being particu-

larly ingenious. The problem of anaphylaxis is discussed, and attention called to the difference between it and increased tubercular sensitiveness.

One of the points on which the authors differ widely from most of the advocates of tuberculin is the question of the diagnostic value of one or more sub-cutaneous injections. They hold that a reaction, while indicating that infection with tuberculosis *has* occurred, does *not* indicate that there is tuberculous disease present requiring active treatment. They are also of opinion that repeated large doses may cause a reaction by inducing an artificial sensitiveness, while failure to react to smaller doses may be due to either deficient antibody formation or to the fact that tolerance has been developed.

Parts II and III deal respectively with "The Method of Immunisation with Tolerance (Koch)" and "The Method of Immunisation without Tolerance (Wright)," and herein lies the outstanding feature of the book, namely the clear distinction between the two large divisions of tuberculosis which can be treated with tuberculin. Part II then deals with the treatment of auto-toxic tuberculosis, in which class come practically all cases of pulmonary phthisis, and in which the essential factor is the production of tolerance. In Part III is discussed the treatment of localised tuberculosis, in which it is seldom necessary or advisable to attempt to induce tolerance by increasing doses given at short intervals. Failure to recognise these main divisions has led to much of the dissatisfaction felt with the results obtained in the past.

In Part II the sections on the principles of dosage are especially worthy of note. Three methods are discussed: (i) that of ignoring reactions, (ii) that of avoiding reactions, and (iii) that of utilising reactions. The authors advocate the last method, and agree with Turban, that if treatment is to be efficient it is impossible to avoid reactions altogether. They object to the pushing of tuberculin through the reaction limit, and give an excellent diagrammatic chart demonstrating their reasons.

When reactions do occur, "typhoid rest" on the lines laid down by Paterson must be strictly enforced, especially in febrile cases and those with secondary reactions.

A general reaction is not regarded as ever dangerous, but the "focal" may be. A "clinical" focal reaction should be avoided if possible. The local reaction may be used as a guide and often as a warning of the approach of a general reaction.

The uniform initial dose recommended in afebrile cases is .001 c.m.m. of any tuberculin, original fluid. The section on increase of doses is very clear, and a chart (Chart xx), slightly altered from Lawrason Brown, gives a most ingenious and labour-saving scheme of dosage on various bases.

The questions of maximum dose and duration, of course, are clearly discussed, and in the next section—repetition of course—comes the other point, on which the authors differ widely from the generally accepted view among the experienced. They state that they "regard it as certain, alike in theory and practice, that reactivity may return without recrudescence of the disease and without any necessity for renewed treatment." The chart (Chart xxi) explaining the views held on this point is particularly interesting, and the black cross, indicating a fatal issue, must be making almost its first appearance in an English text-book.

The word "reactivity" is not satisfactory; it is almost impossible to dissociate it mentally from the idea of renewed activity of the disease. Perhaps "the power to react" or "reacting power" would be preferable.

The authors are of opinion that there are "no contra-indications of an absolute character," but somewhat modify this opinion later when discussing cases of severe mixed infection and those with much consolidation. Like other experts, they do not regard hæmoptysis as a contra-indication.

The combination of sanatorium treatment with tuberculin is highly recommended, and both writers have found the opsonic control of great use, but now only employ it as an aid in difficult problems. Then follow sections on the treatment of auto-toxic tuberculosis in children and on dispensary treatment, the advantages and disadvantages of the latter being made clear.

It is urged, as it is by all who have made extensive use of tuberculin, that patients lose their sputum, or the bacilli from their sputum, more rapidly and more frequently under specific treatment than under other methods, and that cases with the disease arrested are less liable to break down.

An interesting and instructive paragraph is devoted to the beneficial effects of tuberculin on symptoms in cases past hope of cure or even of arrest. Allusion is also made to the use of tuberculin as a febrifuge, given in very small doses in severe cases.

Want of space prevents a full notice of the third part of this book, which is devoted to the treatment of localised tuberculosis without the establishment of tolerance. It deals largely with disease in children, is written equally instructively and lucidly with the previous sections, and is equally worthy of close study; in fact, the subject-matter, dealing as it does largely with the measures which can be taken to render the hopeless case of phthisis an occasional rarity, is, if anything, more important than that of the rest of the book. The original diagram-charts, to one or two of which attention has been especially called, are uniformly excellent and easy of compre-

hension. The extensive bibliography will give some idea of the labour involved in the production of this little manual, which every practiser of physic should read and possess.

Bulletin of the Committee for the Study of Special Diseases. Edited by T. S. P. STRANGEWAYS, M.A., M.R.C.S. Vol. III. Published by the Committee. 1910–11.—This report is not equal in importance and interest to those which have preceded it. It is chiefly occupied by a comparison of the metabolic processes, and particularly the uric acid excretion in gout and rheumatoid arthritis. The reports show that although some few cases of rheumatoid arthritis show a prolongation in the time taken for the elimination of exogenous nitrogen, yet the great mass of osteo-arthritic cases can be sharply differentiated from true gout. The reports on the urine, the pulse rate and the temperature in rheumatoid arthritis will be useful for reference, and bear out the observations of previous writers. The chapters devoted to the association of rheumatoid arthritis and vaginal discharge show that there is some relationship between the presence of the discharge and the onset of the arthritis. It is too of great interest to note that one of the commonest micro-organisms found in this discharge is the pseudo-diphtheria bacillus. Most medical men would confirm this finding, and many have treated the disease with vaccines prepared from pseudo-diphtheria, but with disappointing results. The value of these findings would be much enhanced had we been told whether vaginal discharges were more frequent amongst women suffering from rheumatoid arthritis than amongst those not so afflicted, and whether the pseudo-diphtheria bacillus was equally common in vaginal discharges occurring in patients suffering from other diseases. The work of this Committee is hampered by its lack of funds, and owing to this reason it had to close its Research Hospital in 1908. A special appeal to medical men was made which, although not bringing in anything approaching the sum of money required, enabled them to continue their work at a later date. The Committee are anxious to place their work on an assured financial basis.

Manual of Surgery. By ALEXIS THOMSON and ALEXANDER MILES. Fourth Edition. Vol. I. Pp. xix, 809. London: Oxford Medical Publications. 1911.—This excellent text-book for students and for reference is well known as in the front rank both for teaching students and as a book of reference. In the fourth edition just published the authors have brought the manual well up to date. An excellent account is given of modern advances in the diagnosis and treatment of syphilis. Some new illustrations are added, and more attention is given

to surgical anatomy. The writers propose to add a third volume dealing with operative surgery. More details of method might well be given, as for instance with reference to the use of carbon dioxide snow, aneurysmorraphy, and other procedures, the magnesium sulphate treatment of tetanus should be mentioned, and the calcium lactate for chilblains.

A Synopsis of Surgery. By ERNEST W. HEY GROVES, M.S., M.D. Third Edition. Pp. viii., 585. Bristol: John Wright & Sons Ltd. 1911.—This edition has followed close on the last, and contains a good many alterations, including some illustrations of surface markings, which in spite of the necessary condensation give the important points very well. The book is useful to students as a dress rehearsal before examinations, and to the practitioner in quickly looking up the chief points of a case. It should also prove an aid to teachers in revising a subject before taking a class.

Clinical Surgery. By C. B. LOCKWOOD. Second Edition. Pp. viii., 349. London: Oxford Medical Publications. 1911. —We are most pleased to welcome a second edition of this very useful collection of clinical lectures and addresses by Mr. Lockwood. We are glad, too, to notice that the scope of the work is being widened, two new chapters being added in this edition upon "Fractures of the Patella and their Surgical Treatment," and upon "Amputations at the Hip and Shoulder." We venture to think that Mr. Lockwood's method of always using annealed silver wire would probably be changed for kangaroo or reindeer tendon if he gave it a more extended trial for bringing together the fragments in fractured patella. We are ourselves inclined, too, to look upon the routine use of a drainage tube in these operations as a danger rather than a safeguard, and regard the position of the limb with efficient firm pressure as sufficient means to prevent fluids collecting in the synovial pouches. Mr. Lockwood's style is delightful, and to read his book affords us both pleasure and valuable instruction.

Chirurgisches Vademecum für den praktischen Arzt. Von Professor Dr. ALFRED SCHÖNWERTH. Pp. xi., 167. Munich: Lehmann. 1912.—In this little book, which is clearly printed and well illustrated, the author has managed to say a great deal about all that is really essential in cases of surgical emergency in an incredibly short space. Practically every condition which may result from accident or infection, or otherwise constitute a surgical emergency, is dealt with in a brief and precise manner. There can be no doubt that the author has achieved a veritable triumph in his combination of brevity with lucidity.

Surgical Applied Anatomy. By Sir FREDERICK TREVES, Bart., G.C.V.O., C.B., LL.D., F.R.C.S. Sixth Edition. Revised by ARTHUR KEITH, M.D., LL.D. Aber., F.R.C.S. Pp. 676. London: Cassell & Co. 1911.—This manual for students of medicine is an old friend now brought up to date. The text is clearly written, the diagrams are excellent, and the index comprehensive. A most useful book for all students of surgery, and especially so for those reading for their final examinations.

First-Aid Charts. Compiled by EDWARD C. B. IBOTSON, M.B., B.S. London. Bristol: John Wright & Sons Ltd.—We have received from the publishers four large cards about two feet square suitable for hanging on the walls of lecture rooms, studies, factories and ambulance stations, containing the necessary details for the proper rendering of First Aid. These Charts are clearly printed, well arranged and simple in language. It is easy to see at a glance what to do in any case of emergency. The first table deals with emergencies, accidents and poisons. The second explains fractures, dislocations and sprains—giving the names of the bones, the causes and recognition of the injury, with the First-Aid treatment. The third treats of hemorrhage and wounds, and the fourth of insensibility from accident, poison and fits. The whole subject-matter is admirably worked out by the compiler, Dr. Edward C. B. Ibotson, and when, as at present, there is such a demand for learning First-Aid work in all the voluntary aid detachments and other ambulance classes, the lecturer and the student will find these Charts of the greatest assistance.

Practical Anæsthetics. By H. EDMUND G. BOYLE, M.R.C.S., L.R.C.P. Second Edition. Pp. x., 209. London: Oxford Medical Publications. 1911.—Mr. Boyle is to be congratulated on having kept strictly within the limits of practical anæsthesia. The first edition was deservedly very popular, and we are convinced that a similar appreciation will be extended toward the present edition. Almost every sentence in the book contains some essential detail of instruction in the art of anæsthetising. The lists of indications and contra-indications for guidance in the choice of anæsthetic may appear to be somewhat dogmatic, but cannot fail to give the reader a very clear idea as to how to select the most appropriate method for each case. This clearness, which obtains throughout the work, has enabled the author to produce a very useful chapter on sequel of anæsthetics, with concise and definite rules as to when to substitute one anæsthetic for another. Spinal analgesia is dismissed with such brevity, that one is led to suppose that the author does not make very extensive use of this method.

Editorial Notes.

Dr. Andrew Carrick and Dr. James Cowles Prichard.

In our December number Mr. L. M. Griffiths made reference to the meeting of the Bristol Medical Library Society, at which Dr. James Cowles Prichard was elected President. The report of the meeting in *Felix Farley's Bristol Journal* of July 1st, 1837, contained the following:—

"Dr. Symonds rose to move the election of a President. He commenced by saying that he should be doing injustice to his own feelings and to those of the meeting if he passed over in silence the event which had given origin to the resolution which he was about to submit to them; he alluded to the decease of Dr. Carrick. He felt assured that the members would join him in the opinion that from whatever association of his fellow-men Dr. Carrick was removed, and whatever the object of that association—whether benevolent, friendly or professional—he had not gone without leaving a melancholy blank behind him. They could not but lament him when they remembered the kindness of his heart, the suavity of his manners, the dignified simplicity of his deportment, or the strong vein of native good sense, and the intelligence and varied information which characterised his intellect. Dr. Symonds had often heard him say that some of the happiest hours of his life had been spent among his professional brethren, and he (Dr. Symonds) was sure that those who shared those hours must allow that their departed friend had diffused at least as much pleasure as he had received. He (Dr. Symonds) would not attempt to pronounce the eulogy of Dr. Carrick; he must leave it to persons better qualified, and who had enjoyed a longer personal intimacy with Dr. Carrick than he (Dr. Symonds) could boast of. He must leave it to them to recount the many exertions of their

late President for the good of others, and to dwell upon the untiring and successful zeal with which he performed his public duties, as well as upon the amiable qualities which marked his conduct in fulfilling all that was incumbent on him in the private relations of society, and often more than was incumbent upon him, for he was not one of those economists in kindness and courtesy who calculate to a nicety just how much or how little may be expected of them in discharging the friendly offices of life. Dr. Symonds begged to be allowed to advert to an occasion when the admirable qualities of Dr. Carrick's mind and disposition were brought under his more immediate observation—the time when this city was visited with cholera. Dr. Symonds made some remarks upon the services of Dr. Carrick both in the Anti-Cholera Association and at the Board of Health; and among other things, mentioned that the only time he had ever seen the remarkable placidity of his friend's mind at all ruffled was when any benevolent scheme which he had at heart for mitigating the evils of that period met with any unreasonable opposition. Dr. Symonds then said that he wished that every member of the profession might run his course as happily and as usefully, and go to his grave so much honoured as a practitioner, so much beloved as a man. This contemplation of their loss, though so slightly alluded to, must leave a cloud upon their thoughts; but, happily, clouds, whether in the physical or in the moral world, had nothing settled in their constitution—they were in their nature transient, and subject to dispersion. He ventured to predict that the cloud then hanging over the Society was about to pass away, and fancied that he could already see it gilded by the light that was about to beam upon their horizon; in other words, he felt assured that, great as their regret must be for the bereavement which had befallen them, the resolution which he was about to move would afford them much consolation, and might in time, perhaps, make them forget their sorrow in their joy. He had the honour—one which he valued most highly—to propose a successor to the vacant chair. He had stated his inability to pronounce the eulogy of the departed; he was no less unfitted to attempt the panegyric of the living—such a panegyric,

at least, as might justly be called for by the name which he was about to propose, a name which would shed lustre upon any institution in the whole wide world of science and literature. That name was *Prichard*. He would not attempt to enumerate the several claims of that name on such honours as they had power to offer, nor the several benefits that would accrue to the Society from it. Dr. Symonds then spoke in detail of several of Dr. Prichard's writings, and showed that the authorship of these respectively would entitle him to the direction of associations devoted either to literature or to antiquarian researches, or to philological study, or to the philosophy of life, or to natural history, or lastly, and most importantly, to practical medicine. Dr. Symonds then went on to say: 'But since we are, as I trust we are, a body of men bent upon the cultivation and diffusion of the literature of medical science, a science which either deeply implicates or collaterally touches upon the several departments of knowledge to which I have adverted, where, I again ask, could we find an individual who by his achievements in all these fields has so signally qualified himself to preside over a society devoted to such purposes as our illustrious townsman, Dr. Prichard? For my own part, I do not believe that there exists another person possessed of his singular combination of attainments. If we are desirous of finding his equal in this particular respect, we must go to past times, and even then our search may be unsuccessful, notwithstanding we fall in with a Mead or a Sir Thomas Browne. Those who justly acquire great fame among men must in the same degree reflect honour upon their species. Dr. Prichard has obtained a reputation confined to no country where arts and sciences prevail. How much honour must then he reflect upon the country which numbers him among her sons, how much more upon the province which claims him, and still more upon the city which has been the scene of his labours! Bri tol then may well endeavour to reciprocate in what manner she can the distinction which she receives. Need I remind my fellow-members that in presenting our tribute to Dr. Prichard we are offering it to one whom the most celebrated societies in

the world have delighted to honour—royal societies, national academies, time-honoured Universities? I have still fresh in my memory, and it must be vividly remembered by others now present, an august occasion when, under the dome of a magnificent structure (raised upon the munificence of a physician of other days), surrounded by the very flower of the British profession, a Regius Professor of Medicine handed to Dr. Prichard the highest honours which Oxford has it in her power to confer. The building in which we are now met may not be quite so superb as the Radcliffe Library; we may not constitute just such an assembly as I have mentioned; and certainly the proposer of the present resolution is a very different person from his eloquent and accomplished friend, Dr. Kidd; but I am sure that we will yield to none in a hearty and enthusiastic desire to show that we duly appreciate the honour reflected upon us by our fellow-citizen.' Dr. Symonds then moved 'That James Cowles Prichard, M.D., F.R.S., etc., etc., be requested to accept the office of President of this Society.'

"The announcement of Dr. Prichard's name was received with the loudest demonstrations of pleasure.

Mr. Mortimer seconded the proposition, which was carried by enthusiastic acclamation.

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The South-Western Counties' Association for the Permanent Care of the Feeble-minded.

THE country is gradually awakening to the fact that the problem of dealing with the feeble-minded is one of national importance, and their multiplication, unchecked as at present, a national danger. Pending the law's delays, attempts have been made to grapple with the question by voluntary agencies. The Lancashire and Cheshire Society is one of the best known and most successful. Their farm colony at Sandlebridge is an object lesson as to what can be done by well-directed efforts with moderate means and without legal powers of detention. In November of last

year there was founded the South-Western Counties' Association for the Permanent Care of the Feeble-minded, with the Earl of Radnor as President and Miss Norah L. Fry as Honorary Secretary (*pro tem.*). The counties included are Somerset, Dorset, Devon, Cornwall and Wilts. With Somerset it was thought well to include Bristol. A committee for each of these counties is now actively at work. The objects of the Association are to awaken the public to the danger to the community of allowing the multiplication of the feeble-minded to continue unchecked, to obtain statistics as to the numbers of such persons in each county, to press for the necessary legislation, to establish institutions for the care and improvement of the feeble-minded, and to promote their happiness whilst providing for their permanent detention. This last point is absolutely essential; without legal power of detention following upon due certification attempts to check the multiplication of the feeble-minded must be largely futile. So far as the patients themselves are concerned, from their entire lack of initiative, those who have been taken into a farm colony or institution would stay there quite happily all their lives; but it is found that on their reaching adolescence they are too often removed by their relatives for their own selfish purposes. This very necessary power of detention is contained in all three Bills dealing with the feeble-minded now before Parliament, one of which may be expected to become law this Session.

The committee for Somerset (including Bristol), as the result of preliminary but by no means exhaustive investigations, have ascertained that in Somerset there are a large number of uncertified mentally defective persons between the ages of fifteen and fifty years, many of whom are in receipt of Poor Law relief. Returns show that in addition 282 children in attendance at the Elementary Schools in the administrative county are mentally defective, whilst if the schools of Bristol, Bath and the other towns situate in the county are included in the survey, the total number of mentally defective children is at least 809.

It has been shown that the feeble-minded, with whom epileptics should be included, on account of the close connection

between the two groups and also for convenience of administration, are at least as prolific as normal persons, and that the rate of increase is for the persons belonging to these two categories to double in number in each generation. Obviously it is futile to attempt to deal effectively with the problem unless this constant influx of abnormal children is prevented. The first measure should therefore be to segregate in farm colonies or similar institutions the feeble-minded between the ages of fifteen and fifty. No doubt this can only be done gradually, and the initial expense would be heavy. The institutions need not, however, be expensively built, for it would not be necessary to make them of a permanent character. The experience at Sandlebridge has shown that such colonies could be partly self-supporting. If such a plan were carried out, even within the area of one county, the production of abnormal children would in ten years be enormously checked, and in thirty would be comparatively to the present time a negligible quantity. By this time also the survivors of those originally cared for would have become old, and could be transferred to homes for the aged. So that, although the initial expense would be considerable, there would soon be a saving to the rates, and by thirty years this saving would be very great. For this reason alone it is reasonable that grants in aid, possibly in the form of loans for a period of years, should be given by the Government. The gain to the nation physically and morally, by checking the constant production of degenerates, is too obvious to need emphasising. Whatever help may be ultimately obtained from Government, it is to voluntary effort that we must look to deal successfully with this urgent question.

The sub-committee for Bristol and Somerset of the South-Western Counties' Association for the Permanent Care of the Feeble-minded are issuing an appeal for help towards the establishment of farm colonies or other suitable institutions for the reception and care of the feeble-minded in this county. They hope to begin the work at once, and if properly supported by those who realise its importance, should be able to carry it to a successful issue.

Tuberculin and Tuberculosis.

THE specific treatment of tuberculosis by means of tuberculin has lately made an advance in popularity in this country, but hitherto most of the work done on these lines has originated from Germany or America, and the results have largely been published in German.

In the present number of this *Journal* (page 168) will be found a review of a small book on "Tuberculin Treatment," by Doctors Riviere and Morland, which should meet with a warm welcome. The work of men with considerable clinical experience, it is most lucidly and practically written: together with Dr. Camac Wilkinson's book [somewhat marred by its ultra-polemic tone], and the English translations of the works of Professor Sahli and of Doctors Bandelier and Roepke, this book forms a very complete setting forth of the methods adopted by those who have the largest experience of tuberculin treatment.

The division of all cases of tuberculosis into two classes, namely those who are autotoxic, that is to say are already inoculating themselves with their own tuberculin, and those, on the other hand, in whom the disease is localised, is of the first importance; for it must be admitted that hitherto much of the dosage has been work done in the dark, and the enormous difference in dose recommended by various enthusiasts without any very obvious rationale, has given to scoffers an opportunity of which they have not been slow to avail themselves.

While opinion among authorities seems largely to have crystallised of late, there still remain two important points, apart from questions of dosage and reactions, on which opinions strongly diverge. In the first place, admitting that a positive reaction to a subcutaneous injection of tuberculin signifies an infection by tuberculosis, are we to regard such a reaction as an indication for active treatment in every case? It seems we must at present leave this an open question, with a lingering sense of regret that so difficult a problem will not definitely allow of so simple a solution. Again, does the return of power

to react to tuberculin in a patient successfully treated with it call for further specific treatment or not? Here, also, there is much difference of opinion, and this question too must be left open for future settlement.

Now at the time when Dispensaries for Tuberculosis and Sanatoria for Consumptives are likely to be rapidly multiplied the guidance of this new book will be greatly needed.

* * * * *

Oliver Colley Maurice.

We regret that this member of the Medical Board of the Winsley Sanatorium has succumbed to an attack of pneumonia in his forty-fourth year. He will be greatly missed at Marlborough where he practised, and the Sanatorium will have lost one of its keenest and most useful friends.

Notes on Preparations for the Sick.

"Collosol" Argentum and "Collosol" Hydrargyrum.—Oppenheimer & Sons, Queen Victoria Street, London.—These are colloidal solutions of the two metals mentioned. Such solutions are being introduced for therapeutic uses, and possess many advantages over dissolved metallic salts. Since our previous report (*vide* page 85) we have made a chemical examination of these preparations, and find that the solutions fail to give "ionic" reactions, *e.g.* they are not precipitated by addition of potassium iodide, showing absence of metallic salts.

Hydrogen sulphide causes a separation of the metal, which is a general reaction with solutions of this type.

Trommer Elixir of Cod Liver Oil Extractives with Liquid Malt.—Trommer Co. Ltd., 27 Charterhouse Square, London, E.C.—This preparation is stated to contain the proximate principles of Cod Livers and the finest Malted Barley in combination with Glycerophosphates. The makers claim that it possesses all the advantages of Pure Cod Liver Oil.

An examination shows the elixir to be miscible with water, and to possess a very agreeable taste. Considerable amounts

of phosphorus are present in the ash. As an elegant malt product the extract leaves nothing to be desired, but in our opinion nothing can take the place of cod liver oil itself, administered in some form where its inherent properties are unaffected.

Guttaplasts, Leucoplast, Nivea Soap, Eucerinum. — P. BEIERSDORF & Co., Hamburg.—Samples of these excellent preparations are before us.

A long list of medicated plasters, made in accordance with the directions of Prof. Unna, stating their contents in grammes, and spread on a thin and flexible gutta-percha, combined with muslin; these are called Guttaplasts, or Beiersdorf's Gutta-percha Plaster Mulls.

Leukoplast is a rubber plaster of superior type of great pliability and durability, non-irritating, its whiteness being due to zinc oxide, which gives the adhesive plaster its colour and its name.

Nivea is a super-fatted soap, with many medicated variations, perfumed or otherwise.

Eucerinum anhydricum is an ointment base prepared from the pure wax alcohols of wool fat. The Eucerinum c. Aqua is preferable for ointments or pastes which are to be prepared with powders insoluble in water.

Ureabromin—Bromide of Calcium-Carbamide.— KNOLL & Co., Harp Lane, London.—This crystalline combination, easily soluble in water, and containing 36 per cent. of bromine, has given excellent results in the "Status Epilepticus." It combines the well-known action of bromine with the diuretic properties of urea and the cardiotonic effect of calcium. It has a minimum of toxicity, especially as regards bromide acne, and is put up in the convenient form of 15 grain tablets. It will need a very prolonged experience before one could say that the combination is superior to others containing the same bromine equivalent.

Digipuratum.—KNOLL & Co., Harp Lane, London.—A note on this standardised preparation appeared in vol. xxvii, p. 86. We have now received some sample ampoules of the fluid preparation, which is faintly alkaline and isotonic with the body fluids and intended for hypodermic injection. Each ampoule contains 1 c.c., representing 8 frog units of pharmacological activity. A single dose of 1 c.c. may be repeated four times daily. When hypodermic use of digitalis is required this preparation, always ready, is likely to be most convenient and efficient.

Pond's Plasters.—JOHN MORGAN RICHARDS & SONS, London.—Pond's Tampons are well known and much appreciated. The Plasters are practically a medicated glycerine poultice, being composed of a medicated glycerine and gelatine compound, filling the meshes of the cotton and gauze, and a waterproof backing makes the plaster a cleanly but soft and pliable application. Three varieties are made :—

(*a*) Pond's Pink Plaster, containing methyl salicylate and boric acid.

(*b*) ,, Ichthyol Plaster, containing 5 per cent. of Ichthyol.

(*c*) ,, Thigenol Plaster, with thigenol, boric acid, and tincture of iodine.

The multifarious uses of such plasters are obvious.

Iodex c Methyl Salicylat.—MENLEY & JAMES, London.—In vol. xxix we drew attention to an ointment called Iodex, containing resublimed iodine in a neutral base. We have now received a combination with Methyl Salicylate, which should be most useful in cases of chronic arthritis when the analgesic qualities of the latter drug are added to the iodine base. It should have a large range of utility.

Zematone — Anti-asthmatic powder and cigarettes.—ZEMATONE CO., Nottingham.—Yet another specific powder for inhalation in asthma. Its composition is elaborate, and it is made up in two strengths, labelled No. 1, the stronger ; No. 2, the weaker. It contains the organic bases used in such powders —stramonium, belladonna, red poppy, grindelia and hyoscyamus, with agaricin, sodium nitrate and potassium nitrate. It lights up easily, scintillates well, and gives off the fumes which commonly give so much relief when inhaled by asthmatics. The cigarettes are well made with a mouthpiece, and are not unpleasant to smoke.

Dental Hypodermic Syringe.—BURROUGHS, WELLCOME & CO., London.—Messrs. Burroughs, Wellcome & Co. have recently issued an improved pattern of their Dental Hypodermic Syringe. With the improvements now made it may be regarded as the ideal dental syringe. Its characteristics are summed up in the three words—strength, simplicity and asepticity. It is very strongly made in metal throughout, and is easily and rapidly put together for use and taken apart for cleaning and sterilisation. In mounting the syringe, the barrel, cap, nozzle and needle attachment are locked together by a simple arrangement, which does away with the use of screwthreads, washers and other parts, easily damaged or lost.

In the new syringe this locking device has been much strengthened. Every part being of metal, the syringe can be readily rendered sterile, and for this purpose the metal case in which it is supplied may be used as a sterilising tray. The Burroughs, Wellcome & Co.'s Dental Hypodermic Syringe takes the convenient unmounted needles now so largely used. An ingenious finger-grip, which can be fixed at any point on the barrel, and a screw to regulate the amount of fluid injected, give the final touches of detailed completeness to this extremely well-contrived and well-executed appliance.

The Library of the Bristol Medico-Chirurgical Society.

The following donations have been received since the publication of the List in March.

May 31st, 1912.

Dr. D. A. Alexander (1)	2 volumes.
J. Paul Bush, C.M.G. (2)	2 ,,
L. M. Griffiths (3)	14 ,,
The Middlesex Hospital (4)	2 ,,
The Surgeon-General, United States Army (5)	1 volume.

A framed picture has been presented by Mr. L. M. Griffiths.

EIGHTY-FOURTH LIST OF BOOKS.

The titles of books mentioned in previous lists are not repeated.

The figures in brackets refer to the figures after the names of the donors, and show by whom the volumes were presented. The books to which no such figures are attached have either been bought from the Library Fund or received through the *Journal*.

Ballance, C. A. ..	*Cerebral Decompression in Ordinary Practice* ..		1912
Beaven, A. B. ..	*Bristol Lists*	(3)	1899
Begg, C.	*Sprue: its Diagnosis and Treatment*		1912
Berry and T. P. Legg, J.	*Harelip and Cleft Palate*		1912
Boyle, H. E. G. ..	*Practical Anæsthetics*	2nd Ed.	1911
Bryce, J.	*The Plague of London*	(3)	1860
Burggraeve, A. ..	*Livre d'Or de la Médecine Dosimetrique* ..	(3)	1886
Burghard, Sir W. W. Cheyne and F. F.	*A Manual of Surgical Treatment.* New Edition. (Revised by T. P. Legg and A. Edmunds.)	Vol. II.	1912

Burnet, E. .. .. *Microbes and Toxins* (Trans. by C. Broquet and W. M. Scott) 1912
Bury, J. S. .. .. *Diseases of the Nervous System* 1912
Cameron, Sir H. C. *On the Evolution of Wound-Treatment* .. (2) 1907
Candy, H. C. H. .. *A Manual of Physics* 1911
Catalogue (Index-) of the Library of the Surgeon-General's Office, United States Army. 2nd Ser., Vol. XVI. (5) 1911
Cayley, W. .. .. *Pathology and Treatment of Typhoid Fever* (3) 1880
Cheyne and F. F. Burghard, Sir W. W. *A Manual of Surgical Treatment.* New Edition (Revised by T. P. Legg and A. Edmunds) .. .. .. Vol. II. 1912
Clarke, J. J. .. .. *Protozoa and Disease.* Pt. III. 1912
Crowe, H. W. .. *Consumption: Home Treatment and Rules for Living* .. .. 3rd Ed. 1912
Elizalde, P. I. .. *Pancreatitis acuda hemorrágica* 1911
Examination Papers (Edinburgh), Dental .. .. [N.D.]
Examination Papers (Edinburgh), Fellowship 1912
Fernie, W. T. .. *Health to Date* 1911
Forbes, J. G. .. .. *The Pollution of Swimming-Baths* 1912
French, H. (Ed.) .. *An Index of Differential Diagnosis* 1912
Gebele, H. .. .. *Die Chirurgischen Untersuchungsmethoden* .. 1912
Harris, A. .. .. *Etiology, Diagnosis and Prophylaxis of Phthisis* 1912
Harrison, C. E. Pollock and L. W. *Gonorrhœal Infections* 1912
Homes of the Bristol Poor, The .. .. (3) 1884
Hutchison and H. Rainey, R. *Clinical Methods* .. .. 5th Ed. 1912
Jamieson, W. A. .. *The Care of the Skin in Health* 1912
Johnson, S. .. .. *A Dictionary of the English Language.* 2 vols. (1) 4th Ed. 1775
Keith, Sir F. Treves and A. *Surgical Applied Anatomy* .. 6th Ed. 1911
Krefting, R. .. .. *Der Wasserman'ske Reaktion* 1911
Legg, J. Berry and T. P. *Harelip and Cleft Palate* 1912
Lowry, E. W. .. .. *Can the Doctors work the Insurance Act?* .. 1912
Lucas, R. C. .. .. *Points in Heredity* 1912
McDonagh, J. E. R. *Salvarsan in Syphilis and Allied Diseases* .. 1912
McHattie, T. J. T. .. *Educational Treatment of Stammering Children* 1911
McKail, D. .. .. *Public Health Chemistry and Bacteriology* .. 1912
Major, S. D. .. .. *Notabilia of Bath* .. .. (3) 1871
Mark, L. P. .. .. *Acromegaly: a Personal Experience* 1912
Mayou, M. S. .. *Diseases of the Eye* .. .. 2nd Ed. 1912
Miles, A. Thomson and A. *Manual of Surgery.* Vol. II. 4th Ed. 1912
Miller, F. F. .. .. *Physiology for the Young* .. .. (3) [1878]
Minchin, W. C. .. *Treatment of Tuberculosis, etc., with Allyl Sulphide* 1912
Moll, A. .. .. .. *The Sexual Life of the Child* (Trans. by E. Paul) 1912
Morris, J. W. (Ed.) *Handbook to Bath* .. .. (3) 1888
Morris, Sir M. .. *Diseases of the Skin* .. .. 5th Ed. 1911
Morland, C. Riviere and E. *Tuberculin Treatment* 1912
Mulzer, P. .. .. *The Therapy of Syphilis* (Trans. by A. Newbold) [N.D.]

Murrell, W. .. .. *What to do in Cases of Poisoning.* 11th Ed. 1912
Newman, Sir A. Whitelegge and Sir G. *Hygiene and Public Health* 12th Ed. 1911
Paget, S. .. .. *For and Against Experiments on Animals* .. 1912
Pharmacopœia of the Queen's Hospital for Children .. .. 5th Ed. 1911
Pollock, and L. W. Harrison, C. E. *Gonorrhœal Infections* 1912
Provident Dispensary Work on National Insurance, The Light of Thirty Years of 1911
Rainey, R. Hutchison and H. *Clinical Methods* .. .. 5th Ed. 1912
Rawling, L. B. .. *Landmarks and Surface Markings* .. 5th Ed. 1912
Riviere and E. Morland, C. *Tuberculin Treatment* 1912
Roscoe, H. E. .. *Spectrum Analysis* .. .. .. (3) 3rd Ed. 1873
Rumford, B., Count of. *Essays, Political, Economical and Philosophical.* 3 vols .. .. .. (3) New Ed. 1800–02
Sewell, H. .. .. *Quackery and Medical Law Reform* .. .. [1911]
Still, G. F. .. .. *Common Disorders and Diseases of Childhood.* 2nd Ed. 1912
Thomson and A. Miles, A. *Manual of Surgery.* Vol. II. 4th Ed. 1912
Treves and A. Keith, Sir F. *Surgical Applied Anatomy.* 6th Ed. 1911
Tunstall, J. .. .. *The Climate of Bath* .. .. (3) 1854
Whiteford, C. H. .. *An Operating Theatre in Private Practice* .. 1912
Whitelegge and Sir G. Newman, Sir A. *Hygiene and Public Health.* 12th Ed. 1911

TRANSACTIONS, REPORTS, JOURNALS.

American Association of Genito-Urinary Surgeons, Transactions of the .. .. Vol. VI. 1911
American Journal of Obstetrics, The .. .. .. Vol. LXIV. 1911
American Journal of the Medical Sciences, The .. Vol. CXLII. 1911
American Laryngological Association, Transactions of the 1911
American Surgical Association, Transactions of the .. Vol. XXIX. 1911
Annales de Dermatologie et de Syphiligraphie .. Tom. XI. 1911
Archiv für klinische Chirurgie .. .. Bd. XCIV., XCV. 1911
Archives of Pediatrics .. .. Vol. XXVIII. 1911
Archives of the Middlesex Hospital .. .. .. (4) Vol. XXIII. 1911
Do. do. Index to Cancer Reports .. .. (4) 1911
Boston Medical and Surgical Journal, The .. Vol. CLXV. 1911
British Journal of Children's Diseases, The .. .. Vol. VIII. 1911
British Journal of Dermatology, The .. .. .. Vol. XXIII. 1911
Canadian Medical Association Journal, The .. .. .. Vol. I. 1911
Catalogue of Books, The English, for 1911 1912
Deutsche Zeitschrift für Chirurgie .. .. .. Bds. CX., CXI. 1911
Edinburgh Medical Journal .. .. N.S., Vol. VII. 1911
Gazette des Hopitaux de Toulouse 1910
Glasgow Medical Journal, The .. .. Vol. LXXVI. 1911
Hospitals—
Guy's Hospital Reports .. .. Vol. LXV. 1911
St. Bartholomew's Hospital Reports .. .. Vol. XLVII. 1912

Indian Medical Gazette, The .. .. Vol. XLVI. 1911
Ireland, Transactions of the Royal Academy of Medicine in Vol. XXIX. 1911
Johns Hopkins Hospital Bulletin, The .. .. .. Vol. XXII. 1911
Journal of Experimental Medicine, The .. .. .. Vol. XIV. 1911
Journal of Laryngology, Rhinology and Otology, The Vol. XXVI. 1911
Journal of Mental Science, The .. .. Vol. LVII. 1911
Journal of Nervous and Mental Disease, The Vol. XXXVIII. 1911
Journal of the American Medical Association, The Vol. LVII. 1911
Journal of the Royal Sanitary Institute .. .. Vol. XXXII. 1911
Luzerne County Medical Society, Transactions of the Vol. XVIII. 1911
Medical Annual, The 1912
Medical Chronicle, The .. .. Vol. XXI. 1911
Medical Press and Circular, The .. .. .. Vol. CXLIII. 1911
Medical Review, The .. .. Vol. XIV. 1911
Ophtnalmological Transactions .. .. Vol. XXXI. 1910–11
Philadelphia, Transactions of the College of Physicians of Vol. XXXIII. 1911
Practitioner, The .. .. Vol. LXXXVII. 1911
Public Health .. .. Vol. XXIV. 1910–11
Revue de Chirurgie.. .. .. Bd. XLIII. 1911
Revue générale d'Ophtalmologie .. .. Tom. XXX. 1911
Revue hebdomadaire de Laryngologie .. .. Tom. XXXI. 1911
Rhode Island Medical Society, Transactions of the Vol. VIII., Pt. I. 1910
Scalpel, The .. .. (3) Vol. I. 1823
Smithsonian Report, The, for 1910 1911
Surgery, Gynecology and Obstetrics .. .. Vol. XIII. 1911
Therapeutic Gazette, The .. .. Vol. XXXV. 1911
Zentralblatt für Chirurgie 1911
Zentralblatt für Gynäkologie 1911
Zentralblatt für innere Medizin 1911
Zeitschrift für Urologie .. .. Bd. V. 1911

MEETINGS OF SOCIETIES.

Bristol Medico-Chirurgical Society.

March 13th, 1912.

Mr. C. A. MORTON, President, in the Chair.

A discussion on **"The Intracranial Complications of Ear Disease"** (see p. 97).

May 8th, 1912.

Mr. C. A. MORTON, President, in the Chair.

Dr. E. C. WILLIAMS: (1) A case of **Extensive hairy mole,**

(2) a case of **Infantilism,** and (3) a case of **Precocious development.** The last-mentioned patient was a boy not yet six years old. He was 4 ft. 2 in. in height, weighed 5 stone 2 lb., the weight of a normal child of eleven. He had the beginning of a moustache, pubic hair, and spoke with an adult type of voice. Such cases had occurred in connection with supra-renal and testicular tumours, and in girls with solid ovarian tumours. The patient had no signs of a tumour.

Dr. EDGEWORTH read a note on the **Innervation of the palate.** The levator palati is supplied by the vagus-accessorius nerve through the pharyngeal plexus. The muscle is a derivative of the pharyngeal musculature embryologically, and is correspondingly innervated. With regard to the tensor palati, anatomists have said that filaments from the mandibular portion of the Vth nerve can be traced to this muscle; but removal of the Gasserian ganglion has not given uniform results in the hands of different observers. The speaker had traced the development of the muscle, and found it came from the internal face of the internal pterygoid muscle. It is therefore one of the masticatory group of muscles. Some months ago Sir Victor Horsley divided the Vth nerve in two monkeys, and found that the tensor palati muscle subsequently wasted. This shows that the innervation was from the Vth. The diverse clinical results from the removal of the Gasserian ganglion were explicable on the assumption that the tensor muscle had not much influence on the normal shape of the palate.

Mr. HEY GROVES read a paper on **"Some clinical and experimental observations on the treatment of fractures of long bones, with special relation to the use of intra-medullary pegs."** Special pegs used by the speaker, with a gauge, drills and wires for use in applying the pegs, were exhibited, and the method of inserting the pegs illustrated by lantern slides. In certain cases he considered the use of these pegs was very advantageous for securing correct alignment and stability until the fracture was repaired. With the pegs in position no external splints were required.—The PRESIDENT said he had hitherto hesitated to use intra-medullary supports in factures because he thought they would be so difficult to remove later if trouble arose from their presence.—Mr. GROVES replied that he had removed the pegs in three cases—all cases of comminuted fracture, really unsuitable for the application of the pegs—and he had not found it a difficult proceeding. With aseptic results the pegs gave no trouble.

Mr. H. CHITTY read a paper on **"The artificial production of pneumothorax in phthisis"** (see p. 141). The paper was discussed by Drs. KENNEDY and NIXON and Mr. MOLE.

The Hon. Secretary read the following communication from a Medical Correspondent :—

"My dear Dr. Nixon,

"I am only too pleased to tell you what I can about my pneumothorax experience, for though my 'good' lung is so damaged that I cannot immediately reap the full benefit of the treatment, I can certainly testify to substantial improvement, with a reasonable hope for still better things in the future. Without boring you with too many irrelevant details, I may perhaps remind you that I began to cough in January, 1909; had first hæmoptysis in April, 1909; and since April, 1910, I have been nearly always in bed with a temperature between about 99° in the mornings, and 100° to 101° at night. Profuse thick expectoration, about 10 oz. in 24 hours, and containing, besides numerous T.B.'s, a large and varied assortment of cocci. Physical signs have always been very slight, and in response to the method of feeding in vogue in the sanatorium, my weight increased from 12 stone to 14 stone 7 lb. X-rays long ago showed that the right lung was much more extensively involved than the left. On January 29th, 1912, Dr. Lillingston gave me my first dose of nitrogen—300 c.c. I felt no inconvenience whatever. The next day I had 600 c.c.; and after that I certainly felt considerable oppression of breathing for about forty-eight hours.

"Since then, at intervals of eight or nine days, I have had doses of 700 c.c., 750 c.c., then 300, then 1,000, then 300, then 1,000 again, and on the last three occasions 500 only. After the large doses I was uncomfortable, restless, and feeling 'full of wind' (not much wonder!), but after a few days that passed off. The first effect on the expectoration is to increase it, owing no doubt to its being squeezed out of the compressed lung; and, owing to a want of *vis a tergo*, the difficulty of expelling it is also increased, but after the first twenty-four hours it becomes less. The temperature is raised for the first day or two—I think probably due to increased absorption owing to pressure, an auto-inoculation in fact—but its general level has dropped to normal. I have been able to take walks of nearly two miles; but my left lung, the only one I have left (if I may be allowed to say so) is not a very good one, so I have to be careful and move slowly.

"On the whole, I think the operation deserves a wider recognition than it has hitherto received. It should not be reserved only for cases which are otherwise hopeless; but on the other hand I do not think it suitable for those who are able to get about, and for whom the possibility of cure by graduated exercise (or graduated labour) under sanatorium conditions, is not nearly exhausted. One must, I think,

hesitate before condemning any patient to rely entirely on one lung, though of course at any time the compressed lung may be allowed to expand again.

"I must, however, qualify my remark about the unsuitability of the operation for a patient 'able to get about.' I had in my mind a man able to walk his six or eight miles a day with one-sided disease which one might be tempted to put to rest; but for a patient only able to move about very gently and liable to 'auto-inoculations' on very slight exertion, and especially if there has been hæmoptysis, I think the operation is clearly indicated. What I think it is most important to recognise is that the treatment is *not* to be regarded as a sort of forlorn hope, but one which gives every prospect of success, and is singularly free from risk when properly carried out. There are four cases here just now, and likely to be a fifth, I believe, if they can get a needle into the pleural cavity. All doing well.

"As to the pressure, it may be of interest to note that in my case, at the commencement of each 'refill,' the manometer shows a minus pressure at end of ordinary inspiration of 10 centimetres of water (*i.e.* 5 above and 5 below zero), and a positive pressure at end of expiration of about 1 centimetre. At the conclusion of the performance, after 500 c.c. of nitrogen have been allowed to flow in, the inspiratory minus pressure is equal to about 3 c.m. and the expiratory positive pressure = 4. That is as much as I can stand with any comfort. No doubt in cases where the available pleural space is much circumscribed by adhesions a greater positive pressure can be borne; but in my case the pressure is being exerted on the whole surface of the lung, and probably already produces a fair amount of displacement of everything over towards the left.

"The treatment is long and somewhat irksome, necessitating a small operation, which, by the way, is a mere trifle, hardly to be ranked as an 'operation' at all, but which has to be repeated by some skilled person every ten days until the lung is healed—perhaps for twelve months or more. These considerations seem to me to limit its indication to cases of troublesome hæmoptysis and cases with chronic septic absorption, where one lung is at least comparatively sound. In these cases, and they are not a few, it is, I think, likely to prove invaluable, and lucky is he who in such a plight has not an adherent pleura."

E. MARIETTE, M.B. Lond.

J. LACY FIRTH.
J. A. NIXON, *Hon. Sec.*

Local Medical Notes.

Dr. Robert Fletcher.—The January number of the *Index Medicus* records the fact that Dr. Robert Fletcher has, owing to the state of his health, withdrawn from the "engrossing editorial work" of this valuable publication after over thirty years' work in compiling the *Index Medicus*. Dr. Fletcher entered at the Bristol School in 1839, and it will be recalled that in 1910 the Council of the Royal College of Surgeons awarded him that rare distinction, their Honorary Medal. We wish Dr. Fletcher a speedy return to good health, and we note with satisfaction that the *Index Medicus* will continue the high standard of excellence it has attained in the hands of Dr. Fielding H. Garrison, who becomes the sole editor.

EXAMINATION SUCCESSES.

UNIVERSITY OF BRISTOL.—*M.B., Ch.B. Second Examination:* A. G. Bodman, D. G. C. Tasker, W. K. A. Richards, E. S.White, J. W. Gilbert.

UNIVERSITY OF LONDON.—*Second Examination for Medical Degrees. Part I:* A. W. Adams, F. K. Hayman. *Part II:* H. W. Cooke, G. M. Jackson, H. J. McCurrich, D. G. C. Tasker, W. E. Taylor, Mary E. Joll.

CONJOINT BOARD OF LONDON.—*Materia Medica:* H. B. Logan. *Medicine:* G. F. Fawn. *Surgery:* E. Christofferson,* G. Griffiths,* E. S. Abraham.*

L.D.S.—*Mechanical Dentistry:* K. Batten, S. V. Shrimpton. *Final Examinations. Part I:* J. W. Gilbert. *Part II:* B. L. Morgan,* C. V. Osborne.*

The Royal College of Physicians, London.—Edward J. Cave, M.D. Lond., and J. Roger Charles, M.D. Cantab., have been elected Fellows of the College.

APPOINTMENTS.

Captain F. Percival Mackie, M.B., Ch.B. (Bristol), F.R.C.S., M.R.C.P., I.M.S., who was recently on the Royal Society's Sleeping Sickness Commission in Uganda, has been placed on special duty by the Government of India to investigate the disease known as Kala Azar. The appointment is under the recently-constituted Central Research Fund, and the inquiry will be carried on partly in the Madras Presidency and partly in Assam and Further India, where the disease is endemic.

C. A. Joll, M.S. Lond., F.R.C.S. Eng., has been appointed Senior Resident Medical Officer to Royal Free Hospital, Gray's Inn Road.

* Completes examination.

Leprosy in South Africa.—The now well-known dissemination of leprosy by means of the bed bug, as shown by the observations of Sandes in Robben Island Asylum, and by Long, working independently in Basutoland, who found that acid-fast bacilli can be found in nearly every bed bug which freely bit over leprous tissue, is illustrated by the experience of an old Bristol student, Dr. Alex. Spencer, of Middleburg. Giving an interesting story of his investigation of cases of leprosy in his district, he writes as follows :—

"The 'phone goes one morning early about two months ago. 'Are ye there ?' 'This is the Charge Office.' 'There 's a leper woman, brought in from the district last night, waiting to be seen here. Can you please make a point of seeing her as soon as possible this morning ?' The leper woman *was* a leper, and pretty bad. Her name was Kaitje Mamori, and she hied from a farm called Roodepoort No. 8 in this district. Her husband, she informed me, was also a leper at the Pretoria Leper Asylum, and his name Adonis ! So I certified her and put things in trim for the sending of her to Pretoria Asylum too in the leper coach, which must be wired for wherever it may be, perhaps picking up lepers in another part of the Transvaal. At home later I entered her up in my Register of Lepers—now twelve years old, and giving particulars of 112 sent to Pretoria from this district—and looked up 'Adonis.' He had been certified by me in August, 1902, and sent off to the Asylum. I also found three other lepers had been sent into town from this same farm, Roodepoort—two in 1907 and one in 1910—besides this Kaitje and Adonis. So I have to hie me to this farm, and get out a history and chart of all the belongings—wives, husbands and children—of all these lepers, connect them, try and trace the source of contagion, and examine all their belongings for any signs of the disease in any of them. When all this is done the report of the whole proceedings, step by step, is made out, and with a genealogical record of them forwarded to the Minister of the Interior and by him to the Asylum. On this occasion I found that the old man was a Mormon in practice, had four wives, each with six, six, seven and ten children respectively ! This is not out of the way for these native animals, and accounts for the rapid increase of 'em out of all proportion to Europeans, with which our laws do not allow us to compete. Of this family of twenty-nine, fourteen were (luckily) dead, mostly in infancy ; but the rest, many of them married and with hordes of children themselves, had all to be seen, scattered here and there all over the district, and examined for any signs of leprosy. So, too, with the other three cases removed more recently from this same farm suffering from the disease. This has occupied me at intervals during two months, and now is finished and the report gone in."